Irvine New Town

Final Report on Planning Proposals

A report to the Secretary of State for Scotland
by Messrs. Hugh Wilson and Lewis Womersley,
Chartered Architects and Town Planners

in association with
Jamieson & Mackay, Consultant Highway and
Traffic Engineers

William Gillespie & Associates
Landscape Architects

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1 Introduction

1. We were asked in January, 1965 by the Scottish Development Department .....

> ....."to prepare and submit to this Department a report and plan for the area of possible expansion lying to the east of and including the Burghs of Irvine and Kilwinning. This plan should provide for an expansion of population of the order of 55,000."
>
> "The master plan should make provision for land uses throughout the area and for traffic movements and should include sections on population and employment structures, shopping provision and traffic projections, including a study of work journeys in the sub-region. In view of the Government's concern that information should become urgently available as a basis for decision making in the short run, you are asked to submit an interim report by 31st May, 1965, outlining the major land uses you would propose in the area together with a primary communications network."

2. We submitted our Interim Report at the end of May, 1965; this was circulated to the local authorities concerned and following discussions the Secretary of State published the Draft New Town (Irvine) Designation Order in February, 1966. A public local enquiry into objections to the Order was held in July 1966 and the Order was confirmed with modifications in November 1966.

3. We have collected a considerable amount of information on the existing conditions in the area of search which we have assumed,for the purpose of our study,to extend just to the north of Kilwinning, to Bankhead to the east and to Barassie to the south. The essential parts of this information are set out and analysed in this Report; the remainder will be made available to the Development Corporation. We have also considered the relationship of a growth area at Irvine to the sub-region in an attempt to assess the potential of the area and its possible effect on this and other developments in the west of Scotland.

4. In considering the expansion of Irvine and Kilwinning it is necessary to study the existing settlements in the sub-region. Allowance must be made for

various sets of circumstances in deciding the amount of land to be reserved for certain uses and in working out the communications network. The most significant of the extreme circumstances are that Irvine might become a major employment centre fulfilling not only its own needs but also serving a manufacturing region of growing mobility or, on the other hand, it might fail to grow for employment purposes and consequently be dependent on other regional centres, particularly Glasgow, in this respect. Again it might become a regional centre for shopping purposes, of similar or greater importance than Ayr and Kilmarnock, or it might only be able to support a minimum of central area facilities. These combinations of alternatives represent four basic characters which Irvine may acquire. In addition, consideration must be given to the town's possible importance as a recreational centre, as a regional centre for administrative, hospital and educational services and as a distributive centre.

5. The increase of mobility in the future and the growing awareness of population growth must change many regional planning concepts, with greater importance attached to new cities, offering above all a broad economic base, rather than to new towns. A city with its diversified employment structure and regional facilities can be a big magnet to industrialists. A scheme of such magnitude in West Ayrshire might well be a bold move but one which could create a more balanced spread of the Scottish population within the central belt and which could play a vital part in the solution of Glasgow's problems.

6. The Irvine area lies near the centre of gravity of the Ayrshire population and enjoys the obvious attractions of the west coast, clean air, the mild climate, excellent rail communications with Glasgow and proximity to Prestwick International Airport and to certain main line rail services at Kilmarnock, including sleepers to and from London and the Midlands. Its attraction to industrialists is shown by the international prestige of such firms as Skefco and Chemstrand who have come to the area which already contained I.C.I., who are now undertaking a major expansion at Ardeer; it is worth noting that no other comparable area in Scotland has achieved such important results.

7. Although the new population of Irvine may come from many sources, the obvious magnitude of the Glasgow overspill problem must loom large in any analysis of the position and the special relationship of Glasgow to the west coast must add to the potential of Irvine as a growth area capable of considerable expansion. It would, in fact, be quite reasonable to assume two parallel expansion operations, one based on industrial selection of incoming population as in the other new towns, and the other based on a commuting population from Glasgow and other employment centres.

8. For all these reasons there must be considerable confidence in the growth potential of the Irvine area and with suitable land available for develop-

ment there would seem to be a case not only for assuming that the Irvine growth area will prosper in terms of employment and central area facilities but that in preparing any planning proposals for the 55,000 population increase full account should be taken of the probability of additional expansion beyond that figure in the future. We have adopted this policy in our consideration of land use and the communications network for the proposed development and as stated in our Interim Report we strongly recommend that further thought should be given to this aspect of the operation.

9. Although basic planning aims can be achieved under the most ideal conditions in new towns, each site presents its own particular problems; the Irvine growth area is no exception. Irvine and Kilwinning are two established towns, with a total population of about 25,000 which are now to form part of a new town. Many new and difficult problems arise in this type of operation which are not present when towns are planned on more or less clear sites. It will be necessary to achieve a considerable measure of integration between the old and the new; the introduction of the new town concept must not result in competing towns on the site with all the complications of differing standards and problems of assimilation of the incoming population. There must be a comprehensive approach to all aspects of the operation; new development, redevelopment and rehabilitation of derelict areas of building and landscape. This involves an assessment of the quality and potentialities of the existing towns as well as consideration of the form of the new elements which together will result in the overall planning concept of the new town.

10. The opportunities are immense and it is essential that they should be grasped boldly and generously to ensure that the new town sets a high standard of design to provide the best possible conditions for those who live and work there; it must stimulate its citizens and those who visit it. People need a wide choice of things to do and see and to satisfy these functional and intellectual requirements a town should have character as well as facilities. A new town with all its physical planning advantages can lack the atmosphere that comes from a place or a building having what might be called depth in time. In this respect Irvine has many advantages which can be exploited with careful planning and an intelligent manipulation of the programming of development and redevelopment to achieve a coherent and satisfying community structure.

11. The planning and development of a town is a comprehensive activity involving many skills and interests. The extent to which these can be brought to bear provides some measure of the future success or failure of the town to ensure opportunities for a full life. The planning process must be continuous over the whole period of growth; not only must the planning be comprehensive in its scope, it must be flexible in its application. The plan should provide a basic framework expressed in graphic and written form to guide but not to

stifle the growth of the town. The people now living in Irvine and Kilwinning and those who will come to live in the town must play their full part in its creation including the development of its civic and social consciousness. The character of the town will be derived not only from its siting and its building but from its citizens. In the early years of the development of the new town the contribution of the new population will inevitably be minimal and, therefore, the plan must be sufficiently flexible to take account of the need for changing conditions as the structure of the incoming population becomes more clearly known with the increase of numbers.

12. The Report which follows can be divided into six sections. Chapters 2, 3 and 4 deal with the overall planning concept, the urban structure plan for the new town and the more detailed plans for Irvine and Kilwinning and read together provide a general account of the proposals. Chapter 5 covers the human aspects of regional influences, community structure, population, employment and shopping. Chapters 6 - 13 contain the more detailed studies of land use and communications, Chapter 14 deals with Implementation and Chapter 15 with Town Character. Finally, the Appendices contain survey material, statistics and technical studies.

13. In presenting this Report we wish to record our thanks to the many people who have helped in the preparation of these proposals by giving information and advice. In particular we must mention the officials of the Scottish Development Department and of the local and public authorities concerned.

2 Concept and Plan

PRINCIPLES

14. We have approached our task with no preconceived solutions in mind. The proposals described in this Report are the result of relating to the analysis of the site conditions a seriss of principles and requirements which we believe to be applicable at the present time. These can be summarised as follows:

(i) The planning concept must be sufficiently flexible in terms of land use and communications to allow for growth, to compensate for the uncertainties of long term forecasting and to provide a solution that will function efficiently, both socially and economically at all stages of development.

(ii) There must be regard to a high level of car ownership and usage in the design of the communications system and also to the integration of all forms of transport. With town growth, traffic problems and the relative importance of public transport will increase considerably, not least in the existing town areas. A town structure is required which relates growing traffic to growing development in such a way that the capacity of the traffic facilities can maintain an acceptable level at all stages without over provision and within an agreed investment policy. Since the free movement of the motor car becomes more and more difficult with increasing size of towns, the system should provide for the possibility of a change in emphasis from private towards public transport as the town grows and while allowing for the maximum facilities that good traffic planning can provide, it must also encourage the growth and use of public transport.

(iii) The design of the vehicular communications system must be based on a clearly defined hierarchy of roads and public transport routes. The main roads must be free from conflicting activities such as parking and servicing of buildings.

(iv) Pedestrians and fast moving vehicles do not mix and there must be the maximum segregation throughout the town with a separate, direct, well-defined and attractive footpath system linking the residential areas with the schools, shops, workplaces, recreation areas and other communal facilities.

(v) The development should be based on a series of environmental areas from which extraneous traffic is excluded.

(vi) Land uses with high traffic generation should be dispersed to achieve the maximum balance of peak traffic flows. This applies particularly to industrial sites and other major employment centres.

(vii) The town should have a coherent structure which can be easily appreciated by those who live in and visit it and an appropriate urban character should be achieved with a good relationship between buildings and spaces. It should fit into the regional landscape and seascape and the limits of building development should be clearly defined to achieve the maximum contrast between town, countryside and seaside rather than to encourage or permit a suburban sprawl on the periphery of the town. The new development should be carefully related to the existing.

(viii) There should be a good balance of population in relation to age groups, family structure and employment to provide a sound basis for the development of the town at all stages of its growth particularly at the second generation period.

(ix) The programming of the development must be arranged to ensure that at each main stage of the initial building period a part of the town will be established that will provide a reasonable range of facilities for the population. Any necessary redevelopment to ensure comparable standards in the existing town or integration between new and old should be phased into such a programme. Building should proceed progressively section by section to cause the minimum interference to the people living in the town.

CONCEPT

15. The planning concept for the new town has been derived from consideration of these principles and requirements with particular reference to the problems of growth and to the need to ensure that the town will provide a good environment for those who will live and work there.

16. The problem of the design of a pattern of development which allows for growth whilst maintaining good environmental standards must be concerned particularly with traffic systems and the ultimate emphasis on public transport.

17. The essential characteristic of public transport is a line of movement

with stopping points to which people walk or go by taxi or car. Each stopping point, therefore, becomes the focus of the surrounding area, and it follows that the town structure could be in the form of a series of districts based upon walking distances, containing residential, industrial or recreational development, and related uses, connected to each other and the town centre by the public transport line, roads and footpaths. On the basis of about a 7 - 10 minute walk being the acceptable maximum, each district would have a radius of between $\frac{1}{3}$ and $\frac{1}{2}$ mile.

18. Residential districts must be designed as environmental areas and among other things, pedestrian and vehicular movements should be properly integrated. Whilst vehicular movement can be controlled simply by the use of kerbs and bollards the pedestrian cannot be contained to anything like the same extent. Since both vehicles and pedestrians must meet on some journeys (home to parked cars, delivery vans, etc.) the aim should be the expression of this multi-use character by road design that reduces the speed of vehicular movement to a level compatible with that of the pedestrian. However, the provision of primary footpaths linking home to shops, work, school, etc. can do much to make pedestrian movement more convenient. By locating the district shops, schools and community facilities near to the public transport stop a pattern of radial pedestrian movement is established and by directing traffic outwards the periphery of the area pedestrians are naturally drawn away from the more heavily trafficked roads. The collector roads on the periphery are in turn connected to the primary roads running along the spine of the districts. The resultant movement pattern within the 'basic district' is shown in diagram form in fig. 20, page 69.

19. A series of linked district centres on a communications spine can result in a town structure capable of expansion by the addition of further districts at either end and the construction of primary roads, necessitated by the increase in traffic, on the flanks of the development. However, it is desirable in order to achieve maximum dispersal of traffic, and hence efficient use of both road space and public transport, that residential and industrial districts should be dispersed in a proportion of approximately 3:1.

20. The ratio of public to private transport can vary as the development grows since an emphasis is placed upon increasing widths of existing roads and increasing frequency of buses rather than on the construction of new roads.

21. A fundamental feature of the concept is the association of the public transport and private transport systems in a communications corridor. This results in flexibility in growth related to the rate of general development.

The stages of growth of the transport corridor could be (fig. 1, page 13):

- i. single carriageway with mixed private cars and buses
- ii. either: single carriageway road for private transport and public transport on a separate route or dual carriageway for mixed use
- iii. dual carriageway road for private transport with public transport on the central reservation
- iv. extra lanes to carriageways, or separate bypass roads for private transport. More efficient forms of mass public transport along the existing route.

22. The development of the public transport system from buses to any other form (rail, hovercraft, etc.) can occur when the town growth and usage make it economic. Buses could, of course, be retained on the segregated facility as the ultimate public transport service. However, the following points are of vital importance:

- i. the public transport must provide journey times comparable with private transport and, therefore, must not be impeded by private vehicles
- ii. it must evolve economically as growth takes place
- iii. it must be able to provide better access to the major distinations, such as shopping centres.

23. Flexibility is possible in a district both in its initial design, and in its growth over a long period of time. Within the basic framework of planning and communications principles, units are capable of independent design and thus variety can be achieved in population, density, form and layout of development by the exploitation of the natural landscape characteristics of each site.

24. This concept is elaborated in Appendices II and III of our Report to the Minister of Housing & Local Government, Northampton, Bedford and North Bucks Study, an assessment of inter related growth.*

25. The plan form that arises from this concept can be likened to a necklace, the beads of varying shape and size representing the units of development and the string the public transport system. This concept has been applied to the site conditions in the Designated Area in relation to the amounts of land required for the various uses.

SITE

26. The Designated Area of some 12,440 acres is situated in Ayrshire,

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* H M S O , 1965. Price 25s.

on the west coast of the Firth of Clyde opposite the Isle of Arran (fig. 32, page 129). It lies within a bowl of land formed between the hills behind Ardrossan in the north and Dundonald in the south. The land is generally flat with gentle undulation from the beach and sand dunes to the foothills. Across the area the River Garnock, Lugton Water, the River Irvine and Annick Water flow into Irvine Bay following winding courses through parallel-sided, flat-bottomed valleys, flanked by generally shallow but steep banks (fig. 34, page 132).

27. There has been extensive coal mining in the area in the past although subsidence of the surface can be regarded as complete. A thorough survey has been made of the workings to determine areas suitable for development (Appendix 2, fig. 40, page 143). Fireclay deposits are being mined; sand and gravel are being extracted in two areas and there are considerable deposits to the south of Irvine (fig. 35, page 133).

28. The area is served by a network of roads, most of which require improvement or re-routing. These include A78, a trunk route serving the coastal towns between Greenock and Ayr; A737, serving the communities along the Dalry valley from Glasgow to Kilwinning; A736, the direct route across the moors between Glasgow and Irvine passing through Barrhead, Neilston and Lugton; and A71, the main route between Kilmarnock and Irvine. Rail communications to Glasgow and to Ayr are good (fig. 32, page 129).

29. A bypass road is to be built to replace the existing A78 trunk route through Irvine and a new line has been established under the 1946 Trunk Road Act (fig. 3, page 15).

30. Existing building development in the area is concentrated at Irvine and Kilwinning with smaller settlements at Girdle Toll, Springside, Bankhead and Dreghorn (fig. 38, page 137).

31. The Ayrshire Central Hospital occupies a site of some 100 acres to the east of the Kilwinning-Irvine road, A78. The Ministry of Civil Aviation have a radar station on a site at Gailes to the west of road A78. This is a short term use and the land will eventually be released for other purposes. The Ministry of Defence have two Army stations in the area; the Eglinton Vehicle Depot, adjoining the Ayrshire Central Hospital to the north, is a long-term requirement and the Dundonald Camp and Rifle Range, to the west of road A78 and adjoining the radar site, will be required at least until 1970.

32. There is some land liable to flooding within the big loop of the River Irvine, north of Low Green. The Shewalton Moss to the south is a large area of peat, nearly all of which is unbuildable. The I.C.I. factory at Ardeer is surrounded by a safety zone which affects some 600 acres of land; this area is not available for urban development.

33. The landscape of the undeveloped areas arises from the pattern of hedgerows, shelterbelts and copse planting but closer to the existing urban settlements, tree belts have either been cut down or are in decay. The coastline and river estuary landscape remains relatively uninfluenced by development and has its own unique character. The landscape of Eglinton Castle is in decay. There are many bings, most of them small and clothed with vegetation but one to the south of Kilwinning is fairly large and should be removed.

34. The site conditions summarised above and more fully described in Appendix 1 are illustrated in two maps indicating restrictions on and opportunities for development (fig. 3, page 15 and fig. 4, page 16).

35. From various studies detailed in the following Chapters the principal land use requirements for the new population can be summarised as follows:

Housing	1,600 acres
Central Area	220 "
Education	200 "
Industry	700 "
Open Space (excluding golf courses)	500 "
	3,220 "

36. In the application of the planning concept to the site conditions, there is not only the question of making the best use of the available land by exploiting the landscape characteristics but also of reconciling the major elements of the existing land use pattern with the proposed development to produce a coherent plan for the whole area. Of particular importance are Irvine with a thriving town centre, a successful industrial estate and railway stations; Kilwinning with an industrial estate and a station at the junction of the main Glasgow/Ayr line and the coastal line through Ardrossan, which could become the major transport interchange point of the new town; and the industrial areas containing I.C.I., Skefco and Chemstrand.

37. The site conditions determine the plan form as a belt of development about one mile wide and five miles long stretching in a wide arc from Drybridge in the south to Kilwinning in the north and flanking the eastern edge of the Irvine built-up area (fig. 6, page 18). The road pattern provides the links, for public and private transport, to connect Kilwinning, Irvine and the existing industrial areas at Drybridge, to the new development and forms a loop with a cross connection between Irvine and the new town centre which is located to the east of Girdle Toll. The system could link up in the future with Stevenston, Saltcoats and Ardrossan. With this planning concept it would be perfectly feasible to increase the size of the development by forming corridors of growth in the direction of Kilmarnock or Ayr in the south and Dalry or beyond in the

north by continuing the communications spine and the primary roads which would then be required on the flanks (fig. 5, page 17). Because of the flexibility built in to the system each unit or group of units would have its own character and identity relating to site and environmental conditions.

38. The area of site selected for the new development forms part of the foothill landscape which lies immediately behind the raised beaches. It is composed of broad shelves of land separated by fairly sharp gradients and punctuated, particularly along the east boundary of the area, by steepsided ridges. Whereas the gradients between the shelves generally lie in a south east/north west orientation and present a face to the prevailing south westerly winds, the valleys between the ridges tend to lie in an east/west alignment and are, therefore, open to the cold easterly winds which predominate in the Spring of the year. Strong winds are a feature of the Ayrshire coast and shelter is, therefore, an important factor in the planning of this development.

39. Much of the land contained within the shelves lies at gradients flatter than 1:15 and a considerable proportion is at very flat gradients. It follows that development should, if possible, be kept away from the line of ridges and that a careful relationship between building development on the shelves and afforestation on the slopes which separate them will provide a basis for the creation of a series of integrated localities sheltered and contained by the folds of ground and the tree planting.

40. With this in mind a general visual field survey has been carried out together with a detailed study of the ordnance maps of the area with ground contours at 5 ft. intervals. The first objective was to determine a line for the communications spine, which would allow for the best possible location for the residential and industrial districts which it would serve. The site was broken down into the following gradient categories:

Steeper than 1:5 - regarded as land unsuitable for development
1:5 - 1:15 - land to be avoided for development purposes because of the predominance of flatter land in the area, and because of the desirability of tree planting on these steeper slopes for shelterbelts and containment
1:15 - 1:30 - regarded as suitable land for residential development
1:30 - 1:50 - regarded as suitable for certain types of industrial and commercial development
1:50 - flat - suitable for public and school playing fields and all forms of industrial development

41. A very suitable line was found for the communications spine, which while capable of construction with a minimum of ground works, will yet allow for simple pedestrian under or over passes fairly regularly along its length. Furthermore this line is so located as to allow for a minimum lateral development of $\frac{1}{3}$ to $\frac{1}{2}$ mile on each side.

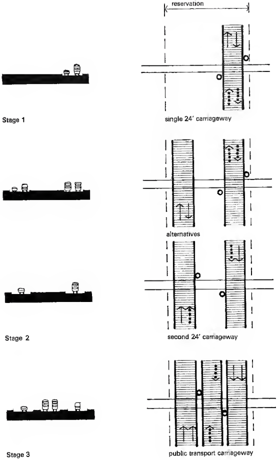
42. The site was studied in detail to determine a pattern of physical and visual barriers prominent enough, with or without tree planting, to form natural boundaries to localities which could be visually self-contained and enjoy their own particular micro-climate and local characteristics. The establishment of these localities, and the relationship between them and the general pattern of land use, is regarded as being of the greatest importance in the establishment of a firm basis for a high quality of environment.

43. Fig. 29, page 107 illustrates some aspects of this analysis which combined with the mining survey has been used to determine the areas and extent of development and road alignments.

44. The Basic Plan is illustrated in fig. 6, page 18 and indicates the framework of land use and communications.

45. It is in the assessment of industrial land that the need for a flexible land use plan is most apparent since it is impossible to predict accurately the type of industry likely to be attracted to the area. The density of workers per acre as between different types of manufacturing industry and between service and manufacturing industry can vary considerably. This not only affects the amount of land but also the generation of traffic, particularly on the journey to work. The Basic Plan, therefore, can only represent a general framework of land use and communications and must be subject to revision at regular intervals as development proceeds and the employment and population patterns become clearer.

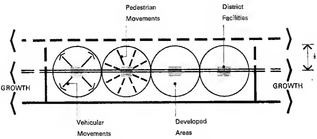
Fig. 1



DEVELOPMENT OF THE COMMUNICATIONS SPINE

Public Transport Halt ○
Public Transport ····>
Other Vehicles ⟶

Fig. 2



LINEAR PRINCIPLES

Fig. 3

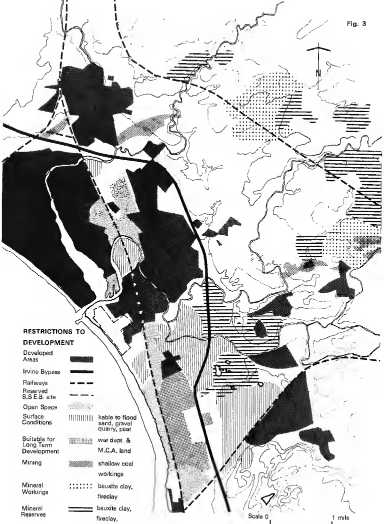
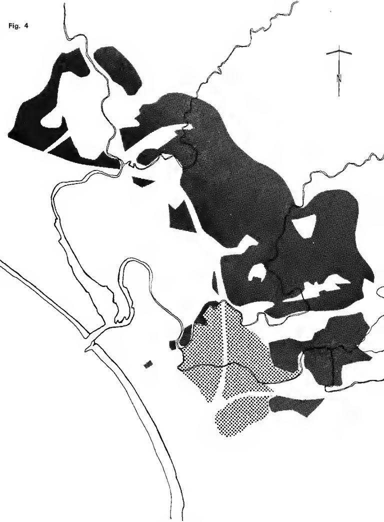

N
RESTRICTIONS TO DEVELOPMENT
Developed Areas
Irvine Bypass
Railways
Reserved S.S.E.B. site
Open Space
Surface Conditions
liable to flood sand, gravel quarry, peat
Suitable for Long Term Development
war dept & M.C.A. land
Mining
shallow coal workings
Mineral Workings
bauxite clay, fireclay
Mineral Reserves
bauxite clay, fireclay, sand, gravel
Scale 0
1 mile

Fig. 4



OPPORTUNITIES FOR DEVELOPMENT

Areas for Building ■

Areas for Surface Mineral Extraction ░

Scale 0 1 mile

Fig. 5

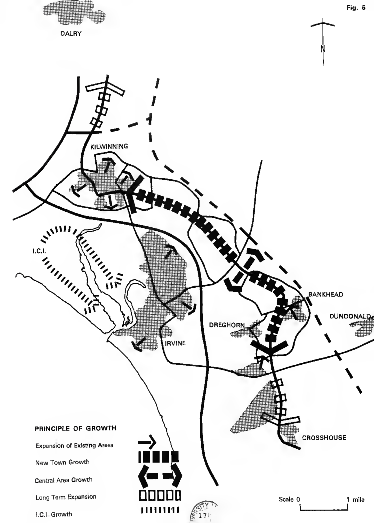
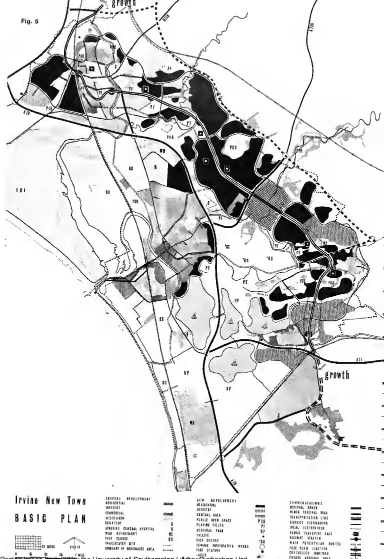

N
DALRY
KILWINNING
I.C.I.
IRVINE
DREGHORN
BANKHEAD
DUNDONALD
CROSSHOUSE
PRINCIPLE OF GROWTH
Expansion of Existing Areas
New Town Growth
Central Area Growth
Long Term Expansion
I.C.I. Growth
Scale 0
1 mile

Fig. 6


growth
A736
A78
A735
A71
growth
A78
PF
POS
C
WD
GC
RP
Irvine New Town
BASIC PLAN
50 ACRES
NORTH
0 ¼ ½ ¾ 1 MILE
EXISTING DEVELOPMENT
RESIDENTIAL
INDUSTRY
COMMERCIAL
WOODLANDS
CEMETERY
AYRSHIRE CENTRAL HOSPITAL
WAR DEPARTMENT
GOLF COURSE
UNALLOCATED SITE
BOUNDARY OF DESIGNATED AREA
C
H
WD
GC
NEW DEVELOPMENT
RESIDENTIAL
INDUSTRY
CENTRAL AREA
PUBLIC OPEN SPACE
PLAYING FIELDS
REGIONAL PARK
COLLEGE
GOLF COURSE
SEWAGE PURIFICATION WORKS
FIRE STATION
LAKES
POS
PF
RP
GC
COMMUNICATIONS
REGIONAL ROADS
MINOR REGIONAL ROAD
TRANSPORTATION LINE
DISTRICT DISTRIBUTOR
LOCAL DISTRIBUTOR
PUBLIC TRANSPORT HALT
RAILWAY STATION
MAIN PEDESTRIAN ROUTES
FREE FLOW JUNCTION
CONTROLLED JUNCTION
FUTURE REGIONAL ROAD

3 Irvine

46. This section of the Report outlines policies for the continuing development of Irvine Burgh, in the context of the plan for the new town.

LOCATION

47. The Burgh of Irvine lies at the mouth of the River Irvine in the lowland bowl associated with the sea. However, it is isolated from the coast by the I. C. I. developments on the Ardeer peninsula to the north, by the site of the Irvine Royal Ordnance Factory to the south west, which is being developed as an industrial estate by the Burgh Council, and in particular by the coastal railway which lies on an embankment to the west of the town centre. Thus the link with the sea is a tenuous one through the decaying harbour district, and thence to the extensive sandy beach which stretches southwards to Barassie (fig. 7, page 26).

HISTORY

48. Irvine is the oldest town in the valley. It was a Royal Burgh by the 13th century, and by the 17th century it was the administrative and economic centre for the whole of north Ayrshire. The harbour district still carries a reminder of the period when it was the chief port for Glasgow, before the deepening of the Clyde. Yet much of the fabric of Irvine dates from the 19th century period of coal exploitation and export. Although the extractive industries in the area have declined and the iron and steel working has been eclipsed, the industrialisation of the town has prevented its development as a Clyde resort like Troon and Saltcoats at the extremities of Irvine Bay.

49. In December, 1959, the Council purchased the site and premises of the Irvine Royal Ordnance Factory, amounting to 180 acres of land and a quarter of a million square feet of floor space. At the same time, it embarked upon a vigorous and successful programme of industrial expansion which has brought a score of firms to the Burgh. Irvine has an impressive record in this respect.

50. There has been considerable development of local authority and S. S. H. A. housing, and in 1959 the Burgh entered into an overspill agreement

with Glasgow involving the building of 1,400 houses. A Town Development Scheme was approved by the Secretary of State for Scotland in the same year and the Council is anxious to extend its activities in this respect.

EMPLOYMENT

51. Although at the present time there is a deficit of jobs in relation to workers in the Burgh, this is probably not significant in relation to the changing pattern of employment and movement which is apparent in the area.

52. The recent development of the Municipal Industrial Estate has provided for a minimum expansion of 100% on the firms' initial requirements. Already a number of Industrial Development Certificates have been issued and the employment potential could increase from the present figure of about 2,000 to something in the region of 4,000 to 5,000 persons. At the same time mobility in the district is increasing and this has been particularly apparent during the last decade in movements to and from the Burgh. Changing conditions with the decline of old established industries have induced a wider acceptance of longer daily work journeys which may be expected to continue.

53. For these reasons, and in order to avoid an over-large concentration of industrial traffic, the amount of industrial land directly associated with the Burgh should remain unchanged.

SHOPPING

54. Irvine will be of increasing importance as a shopping centre during the initial stages of the development of the new town and inevitably there will be pressures to increase its capacity as the population grows. However, it is essential that these pressures should be resisted for, in the long term, Irvine should become a district centre of the new town and any local development would both prejudice the establishment and inhibit the growth of the main centre.

55. At the present time retail premises amount to 170,000 sq. ft. of gross floor space. We propose that as the new town central area grows this should be reduced to 123,500 sq. ft. by the elimination of all but a few corner shops and essentially maritime facilities in the redevelopment of the obsolete properties west of Irvine Bridge and by the contraction of the shopping frontages in Bridgegate and High Street. It is important that individual proposals for redevelopment in the Irvine centre should be considered in this context to ensure that existing plot ratios are not exceeded in respect of shopping.

HOUSING

56. In January, 1966 the Council estimated that it would require 2,348 houses to meet its commitments during the period 1966-1970 and of these, nearly 700 were required for incoming industrial workers and under the overspill agreement with Glasgow Corporation.

57. By the end of 1970 the Council planned to begin building 1, 041 new houses inside the Burgh, and more than half of these were to have started by 1967. In addition the S S H A was to develop 100 acres of land for the Burgh, but outside its boundary, between the Ayrshire Central Hospital and the proposed Irvine bypass. This site should provide a further 1, 500 houses in 2, 3 and 4 storey buildings, although in January, 1966 the Council's programme allowed for starting only 550 of these by the end of 1970.

58. Every effort should be made to accelerate the development of this site which should include a primary school, playgrounds and corner shops. In addition, the major public open space associated with the linear development, planned to the east of the Irvine bypass at this point, should be linked with the new housing by a grade separated pedestrian crossing of the main road.

59. New public and private housing focussed on Irvine centre must be confined by the bypass and the public open spaces to the north and south of the Burgh. Further development will be concerned with infilling three small sites amounting to about 38 acres between the bypass, Annick Water and the southern edge of the built up area, and with the redevelopment of obsolete property inside the existing town.

60. We believe that the best results will be obtained if the Town Council takes the opportunity to integrate its programme with that of the Development Corporation so that not only are the required numbers provided but also a range of houses is built which will provide for variations in social and economic aspirations as well as the size of the family unit. In this way, the physical and social structure of Irvine will be enriched by a more varied pattern of growth than has been apparent in recent years.

RECREATION

61. At present, a football stadium, greyhound track, bowling alley, two cinemas and a dance hall, together with clubs and associations provide for a range of recreational activities in the town. However, the main land use in this respect is public open space; apart from the beach, Towns Moor (83 acres), Low Green (10 acres) and the Recreational Park (52 acres) comprise the bulk of this and these parks are reasonably well distributed in relation to the residential areas of the town. Nevertheless, although they amount to about 8½ acres of public open space per 1, 000 people in the Burgh, in some respects Irvine lacks amenities which should be enjoyed by a flourishing community today. Greater emphasis should be placed on the provision of playgrounds for children in the development of housing areas. Small simple spaces for toddlers will be required close to groups of houses where they can be overlooked by mothers in the home, whereas older and noisier children will be

best served by separate and larger playgrounds somewhat removed from the houses. In addition, modest, hard surfaced 'kick about' areas should be provided for informal ball games. In all cases, if these spaces are to be successful it is important that they should be both isolated from main roads and at the same time sited at focal points in the life of the community.

62. While Low Green is a park of considerable charm and character, the quality of the landscape deteriorates rapidly in the northern part of Towns Moor, and we believe there is a need and opportunity here for a programme of improvement works based on a careful study of the problems involved. Similarly, the Recreation Park would be enhanced by a modest scheme of tree planting.

63. We commend the proposal to construct a riverside walk as part of the redevelopment of the obsolete property in the Fullarton Street area, and we urge that it should be incorporated into the footpath and open space system linking the proposed parkland around Eglinton Castle, through Irvine Municipal Golf Course, Towns Moor and Low Green with the suggested regional park south of the Burgh (Appendix 9).

TOWN FORM

64. Irvine Burgh has a conventional form comprising an old and intimate core contained by a belt of undistinguished residential development which has taken place since the end of the first world war (fig. 7, page 26 fig. 10, page 29 and fig. 11, page 30). However, the pattern is modified by the harbour and the river which, with their associated open spaces, the beach, Bogside Flats and Low Green, connect Irvine centre to the sea via the bridge at the railway station. This succession of either distant prospects or open spaces, together with the core of old buildings, is the key to the redevelopment plan which could give the town its own unique character.

65. It is unlikely that the harbour will regain its position as a major element in the economic life of the region, but it could become important as a yachting centre and for recreational activities. Such development of the harbour area could include moorings, slipways, boat building and repair yards, ships chandlers, club facilities, an hotel and restaurants, etc. One day it might be practicable to construct a weir and locks to provide a sheltered basin.

66. In the meantime, further growth of other types of commercial and industrial activity should be prevented in the area between the branch railway and Harbour Street and near the mouth of the river. In particular, the building of a power station by the S. S. E. B. in this area should be resisted, since such a development would be wholly out of scale with the proper pattern of building, and the overhead power lines radiating from it would have a disastrous effect on the visual character of the Burgh and the remainder of the new town.

67. At the present time, the Burgh is dominated by the spires of Trinity

Church, the Old Parish Church and the Town Hall. They mark the centre of the town in the flat coastal bowl and are particularly significant in local views up and down the river and from the railway station. Although Trinity Church and the Town Hall are unlikely to have a long useful life, and the proposed high flats at Fullarton Street will have a most unfortunate effect on the skyline of the town, the Old Parish Church must continue to be a very significant feature in the plans for local redevelopment. The older parts of Irvine, particularly the Old Parish Church, the Square and the adjacent area, and those on either side of the River Irvine at Low Green have considerable character. It is important that any redevelopment should be carefully handled in order to preserve this scale and character which will be almost unique in the new town. In particular, the temptation to redevelop the shopping centre in large, brash units should be resisted most firmly. Instead, the old town should complement the new town central area by its own intimate and more relaxed atmosphere, where commercial, residential and social activities mingle on a modest scale.

68. Much of the pleasant character of the shopping area is derived from the varying widths of the spaces and of the heights of the buildings which define them, together with the sense of containment induced by the gentle, irregular curves in the streets and the changes in their levels. The crest of the hill in High Street, which occurs at the junction with Seagate is a natural termination to the shopping frontage. However, beyond Bridgegate, the width of the High Street increases and the ground is relatively flat so that the space defined by the curve is very much longer and it will be important to contain this area visually by introducing a closing element into the design of the new buildings forming the street near the Town Hall. This might be similar in form to No. 1 Eglinton Street which helps to define the upper end of the High Street (fig. 12, page 31, fig. 14, page 33).

69. In order to achieve the appropriate character in the redevelopment of the obsolescent property between Irvine centre and the station, and to exploit the significant position of these places in Irvine, we recommend that they should be planned to provide accommodation for some of the influx of people into the new town who will wish to rent, and who are prepared to pay for a house and environment which is better than that normally offered by a local authority. Such accommodation might be provided by either the Burgh or a Housing Society.

70. Compact clusters of buildings should be very carefully designed to frame public alley ways, courts and paved squares which would be sheltered from the elements and from traffic, and which would link up with the town's circulation and open space systems. The buildings should be of varying heights up to four storeys, and at least the majority of the houses should have individual open space either in the form of small, walled gardens or large

private balconies. It will be necessary to provide for one car to each family, in addition to space for visitors and service vehicles.

71. Although the houses in the estates built since 1918, are generally structurally sound and will last for many more years, the quality of the environment in some of these areas falls far short of that expected today, particularly in respect of provision for motor cars and of patterns of circulation and open space. During the years to come increasing prosperity and comparisons with the extensive new housing developments adjacent to the Burgh will underline these deficiencies. However, much could be achieved by the closing of some streets to through vehicular traffic and by a reappraisal of the allocation of space in the housing areas to provide for extra footpaths away from major traffic routes, playgrounds for small children and garages and hard standings for cars. At the same time, the appearance of streets could be improved by extra screen fencing, the planting of trees and shrubs and by the amalgamation of some front gardens to form large landscaped areas.

CIRCULATION

72. The Irvine bypass will divert extraneous traffic past the existing town and this principle should be applied to the detailed consideration of movements inside the town (fig. 9, page 28, fig. 12, page 31, fig. 13, page 32). We demonstrate a system of traffic planning which modifies the network of existing roads to divide the town into a series of districts each of which is free from traffic which is neither generated by nor associated with it. Generally vehicles move outwards towards the collector roads on the edges of these districts thus reducing the density of traffic to a minimum at their centres. In this way, the traffic is distributed on to a hierarchy of roads without the unplanned concentrations which produce points of congestion, discomfort and danger. At the same time, pedestrians will be encouraged to move along the existing streets and new footpaths away from the collector roads, although the local bus service must be confined to the latter.

73. The degree of segregation between vehicles and pedestrians will depend upon the scale of redevelopment which takes place and the types of movements which are to be accommodated. It will be many years before much of the comparatively new housing on the edge of the town is replaced, whereas there are more immediate opportunities for improvements towards the centre. The need for separation is greatest during the child's journey to the primary school and in the shopping centre. For these reasons most predominantly residential zones have been planned to include a primary school and we suggest some more radical adjustments to the traffic pattern in the Irvine centre. However, since we propose a contraction of the shopping area, it is particularly important that the improvements to it do not disrupt the economic activity of the traders who are to remain at its centre of gravity.

The new and improved roads which we propose have been planned to pass through obsolescent property or the largely underdeveloped yards behind the existing shops. Thus extensive and costly redevelopment schemes which are both visually and economically disruptive can and should be avoided.

74. In order to achieve and maintain the proper character and operation of Irvine centre, we recommend the closure of Bridgegate, Irvine Bridge, Fullarton Place and parts of High Street, Montgomery Street and Bank Street to traffic, the provision of service roads east and west of High Street and the improvement of East Street so that it can become part of the collector road system. These measures would ease congestion, provide for parking of cars and the servicing of buildings while permitting a return to the pattern of predominantly pedestrian movements which determined the growth of this group of buildings over the years.

CAR PARKING

75. While employers in Irvine should provide car parking facilities for themselves and their employees to the standards laid down for the new town additional space will be required by shoppers and other visitors to the centre.

76. There will be pressure for temporary car parks during the next few years before the new town central area is functioning and these can be provided on sites which will be cleared for redevelopment.

77. However, in the longer term, we recommsnd that spaces for between 250 and 300 cars be made available in public car parks. The majority of these should be located in the two areas which we have indicated between East Street and Eglinton Street and between East Street and High Street. The balance should be provided near the western end of Irvine Bridge, in the short term zone in the High Street by the Town Hall and in the odd corners which may become available from time to time.

CONCLUSION

78. The plan for the new town provides for development to be concentrated in and around existing settlements during the first five years. The small town character of Irvine will be a priceless and almost unique asset to the new town. Its exploitation will demand the highest standards of skill and enthusiasm from all concerned and the importance of this corporate work cannot be over-emphasised (fig. 8, page 27, fig. 12, page 31).

Fig. 7

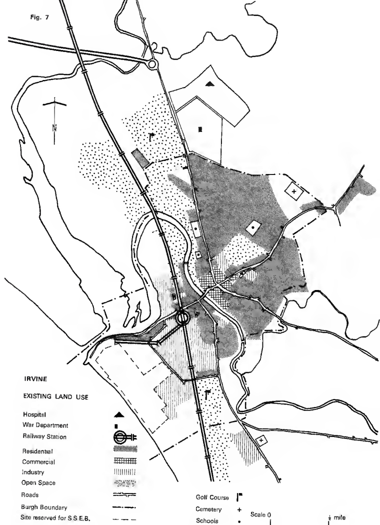

N
IRVINE
EXISTING LAND USE
Hospital
War Department
Railway Station
Residential
Commercial
Industry
Open Space
Roads
Burgh Boundary
Site reserved for S.S.E.B.
Golf Course
Cemetery
Schools
Scale 0
½ mile

Fig. 8

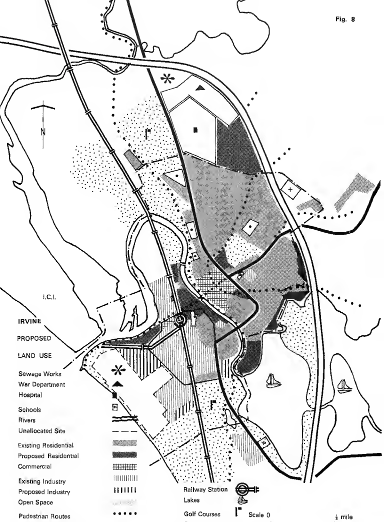
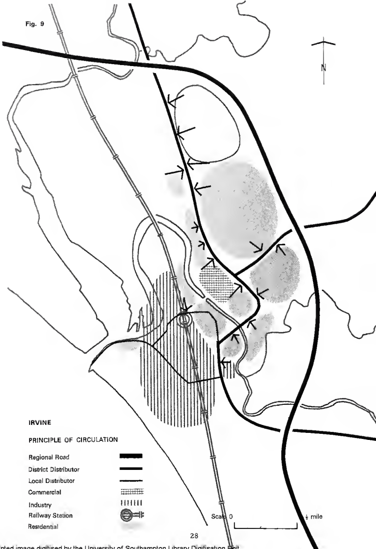

N
I.C.I.
IRVINE
PROPOSED
LAND USE
Sewage Works
War Department
Hospital
Schools
Rivers
Unallocated Site
Existing Residential
Proposed Residential
Commercial
Existing Industry
Proposed Industry
Open Space
Pedestrian Routes
District Distributor Road
Railway Station
Lakes
Golf Courses
Cemetery
Scale 0
½ mile

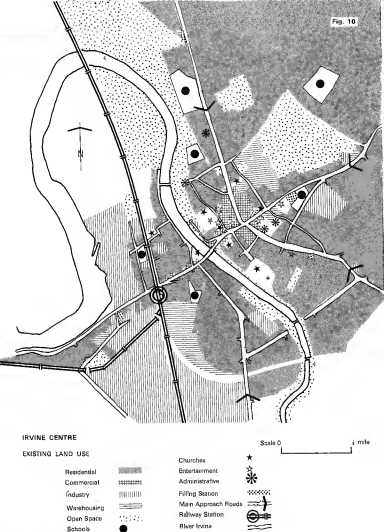
Fig. 9



IRVINE

PRINCIPLE OF CIRCULATION

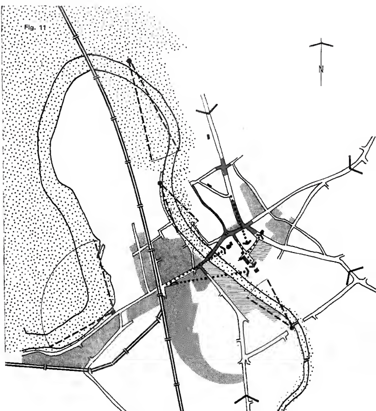
Fig. 10



IRVINE CENTRE

EXISTING LAND USE

Fig. 11



IRVINE CENTRE

APPRAISAL OF CONDITION

Potential Redevelopment Areas ▒
C.D.A. ▤
Buildings of Architectural Importance ■
Areas of Landscape Importance ⁘
Visual Links
Main Approach Roads
Vehicular Congestion

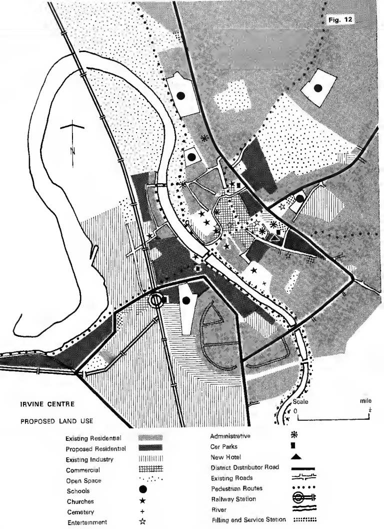
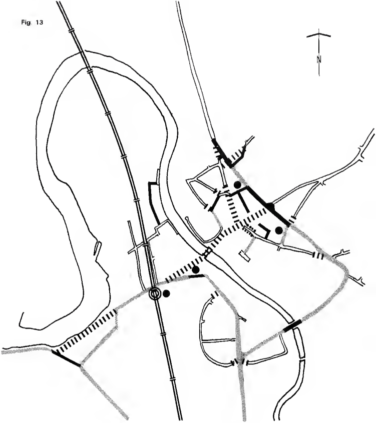


Fig. 12

IRVINE CENTRE
PROPOSED LAND USE
N
Scale
0
mile
¼
Existing Residential
Proposed Residential
Existing Industry
Commercial
Open Space
Schools
Churches
Cemetery
Entertainment
Warehousing
Administrative
Car Parks
New Hotel
District Distributor Road
Existing Roads
Pedestrian Routes
Railway Station
River
Filling and Service Station

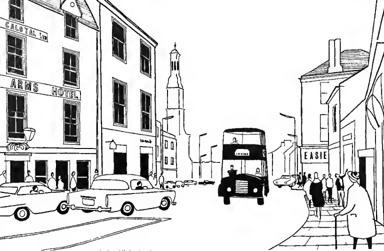
Fig. 13



IRVINE CENTRE

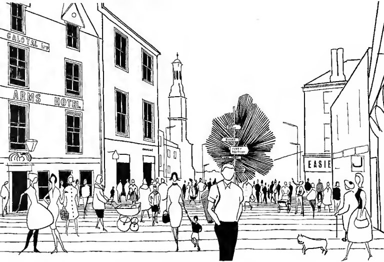
IMPLEMENTATION OF ROAD PROPOSALS

Existing Roads	═		
Roads Closed to Vehicles	▮▮▮▮▮	New Roads	▬
Car Parks	●	Short Term Convenience Parking	⁚⁚⁚⁚⁚
Improved Roads	▨	Railway Station	◎═╞



Irvine High street

High street proposals



4 Kilwinning

79. This section of the Report outlines policies for the continuing development of Kilwinning Burgh, in the context of the plan for the new town.

LOCATION

80. Some two miles inland from the sea at the northern curve of Irvine Bay, the Burgh of Kilwinning straddles the River Garnock as it meanders before forming a tidal estuary and confluence with the River Irvine on the east side of the Ardeer Peninsula. Kilwinning forms the inland point of a triangle of towns round this peninsula, with Irvine to the south and Ardrossan/Stevenston to the west. The mound surmounted by the Kilwinning Abbey Tower in the heart of the town forms one of the most dominant topographical features of the coastal plain when viewed from the Dalry-Lochwinnoch valley.

HISTORY

81. As with most of the inland towns of the area its economic origins lie in service and derivative industries connected to the agriculture of the area, broadening with the Industrial Revolution into an ironworking centre based on local extractive industries. Little now remains of this original industrial base and service industry is hard put to compete with the wider choice provided by Glasgow, Kilmarnock and Ayr to the now much more mobile local population. Thus Kilwinning has become more and more a dormitory area for the I.C.I. Nobel Division with its service industry becoming increasingly geared to this aspect.

82. The efforts of the Burgh have, to a degree, been successful in attracting new industry to the Kilwinning Industrial Estate. It is proposed to extend this estate to include, ultimately, the rectangles formed by the roads and railways at Blacklands/Byreshill junctions, and at Pennyburn Bridge Farm and Dubbs Junction, the area at Nethermains bounded by the Garnock and that at present occupied by the slag heap between Ladyford Avenue and Blacklands, thus increasing the present industrial area at Kilwinning by 180 acres to a total of 220 acres.

83. The attractions of the proposed communications at Kilwinning Station

suggest that a substantial office development potential exists at this location which could become important in the Burgh in attracting commuters from elsewhere in the new town and beyond.

TOWN FORM

84. The original town form was in the traditional vernacular of the district, a linear development along the interesting, curving, east-west Main Street, stretching from the bridge over the River Garnock to the Kilwinning Junction Railway Station, and traversing the north slope of a substantial drumlin. Topping this hill on the south side of Main Street, the remains of Kilwinning Abbey, with the tower still standing, form the focus for the town and, visually, for the whole surrounding area. Subsequent development has been concentric about Main Street with peripheral developments taking a linear form along the main roads (fig. 15, page 38, fig. 16, page 39).

85. The largest increase in housing has taken place since the last war in the form of two storey local authority housing developments in the Dirrans, Buckreddan, Blacklands and Woodburn areas. The Burgh has established in its Bridgend housing redevelopment, the superior standards which should be attained in future expansion areas of the Burgh. There has also been a certain amount of indifferent private construction particularly near McGavin Park.

86. In an attempt to reorganise and revitalise the main shopping street in Kilwinning, a comprehensive redevelopment area has been embarked upon, and some demolition and construction has taken place. This, unfortunately, has been aligned with the object of widening the main street to permit more traffic to pass through the shopping area. The result of any such road widening and straightening would mean a serious loss of character and intimate human scale and would also be to the detriment of the street as a shopping attraction. Our proposals have attempted to remedy this situation.

87. In the new town plan it has been found convenient to consider an expanded Kilwinning as a full district. The necessary hierarchy of motor and public transport routes can be accommodated with minimal disturbance to the existing community; thus major redevelopment of Main Street for motor traffic purposes becomes unnecessary and it is suggested that vehicular access should be limited to vehicles serving shops without rear service (fig. 17, page 40).

COMMUNICATIONS

88. Kilwinning is reasonably well served by public transport, with adequate bus services and access to the Glasgow/Ayr and Glasgow/Ardrossan railway lines at Kilwinning Station. However, the town road system of radial routes all leading to Main Street, is not able to carry present traffic loads and would require major improvement to cope with natural increases. Thus, the new town plan provides the opportunity for a more complete solution to this

problem than the Burgh could tackle on its own. In considering Kilwinning Burgh as a district of the new town, Kilwinning Station becomes a major transport interchange for the whole area. Using existing road lines and gaps in existing development, it is possible to insert an economic and efficient road system with very little disturbance of property. In addition, a footpath system is proposed to connect all focal points in the Burgh and new town. The road hierarchy consists of a communications spine connecting the centres of the new town districts; a district collector road looping round the periphery of Kilwinning and a series of local collector roads connected to service roads. To eliminate through traffic where possible, service roads should be made discontinuous (fig. 18, page 41, fig. 19, page 42).

89. In the existing Kilwinning central area four local collector roads are proposed which follow existing road lines from the district collector to a series of interconnected car parks at the town centre. It is essential in this respect that sufficient deterrents and obstructions should impede cross town traffic at the car parks to lead this traffic onto the collector roads. Other local collector roads will be required to serve new housing areas and their junctions with the collector road will be subject to the detail design principles of the expansion areas.

90. Part of the district collector will, in the case of Kilwinning, carry a number of public transport routes from Ardrossan/Stevenston. In the east it will follow the line of existing roads. However, the other sides will for the most part be new constructions to serve expansion areas. The district collector intersects with the communications spine at Kilwinning Station and at Dirrans.

91. The communication spine enters Kilwinning from the Eglinton Park district at Dirrans and loops south of the town centre to meet the Main Street at Byres Road to which it runs parallel to Kilwinning Station. It could ultimately be connected to the regional road complex near Smithstone House.

HOUSING

92. Most of the older housing associated with the Kilwinning centre at Main Street is decayed and sub-standard. Many of these buildings are of sufficient intrinsic merit to justify renovation and restoration to retain the character of the area. In the areas beyond the main frontages, there is considerable scope for redevelopment using housing forms compatible with the renovated areas. Particular care must be taken in this redevelopment to maintain the effective skyline created by the hill surmounted by Kilwinning Abbey Tower (fig. 16, page 39).

93. The condition of the private developments surrounding the Kilwinning centre is generally reasonable and for these, together with the major post-war

housing schemes, the primary need is for a consistent and extensive landscape and car parking policy to raise the standards of amenity to the level to he anticipated for the rest of the new town.

94. We propose the development of some 230 acres of land on the edge of the built up area for public and private housing. The total increase in housing should be of the order of 2,750 houses which would accommodate 8,800 people (fig. 17, page 40). Details are shown in table 1:

Table 1

KILWINNING BURGH - PROPOSED NEW HOUSING AREAS

Locality	Type	Gross area (acres)	Gross Residential Density (persons per acre)	Population
Cranberry Moss	L. A.	100	40	4,000 + 1/P. S.
Doura/Castle Hill	L. A.	97	40	3,880 + 1/P. S.
Little Redston	L. A.	6	40	240
Redstone	Private	9	25	225
Woodgreen	Private	6	25	150
Inner Wood	Private	12	25	300
Total		230		8,795 = 2,750 houses

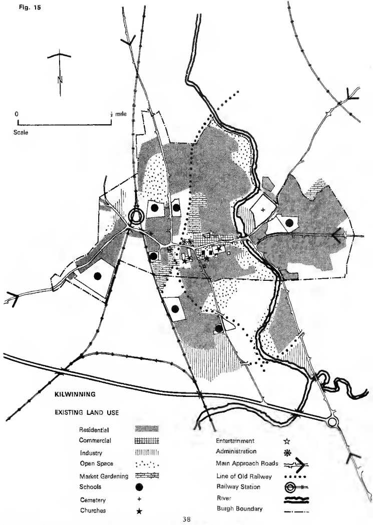
95. As previously mentioned, the housing redevelopment at Bridgend should set the standard for future building, and it is essential that development should be planned comprehensively to incorporate the necessary separated pedestrian and vehicular circulation systems together with provision for car parking, toddlers play and puhlic open space.

RECREATION

96. Reasonahly well served for local recreation, Kilwinning's greatest need is for local play areas. Sites should be found in existing housing areas for toddlers and younger children's playgrounds. The older age groups are adequately provided for by the existing facilities supplemented by the opening up of those attached to schools. However, the increase in population proposed indicates the need for a larger sports centre providing for a fuller range of activities. The new town plan includes for such a centre in the Eglinton Park district to serve the north end of the new town.

97. The importance of the River Garnock to the amenity of the new town and to Kilwinning cannot he too highly stressed. This river is still pure enough to support excellent fishing right to the sea and measures must be taken to ensure that this continues. The plan for Kilwinning indicates the creation of a footpath from Ledcamerock to Dirrans on the west hank of the river and connected to the primary footpath network of the Burgh.

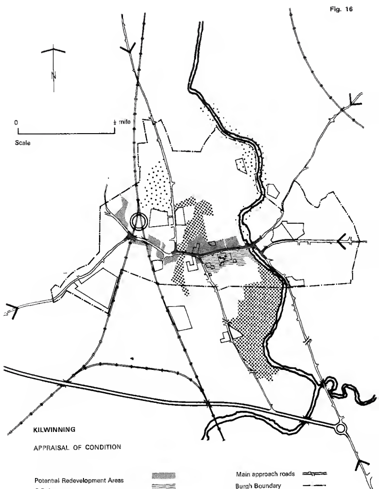
Fig. 15



KILWINNING

EXISTING LAND USE

Fig. 16



KILWINNING

APPRAISAL OF CONDITION

- Potential Redevelopment Areas ▨
- C.D A
- Buildings of Architectural Importance
- Areas of Landscape Importance
- Areas for Landscape Rehabilitation
- Main approach roads
- Burgh Boundary
- River
- Railway Station
- Vehicular Congestion

Fig. 17

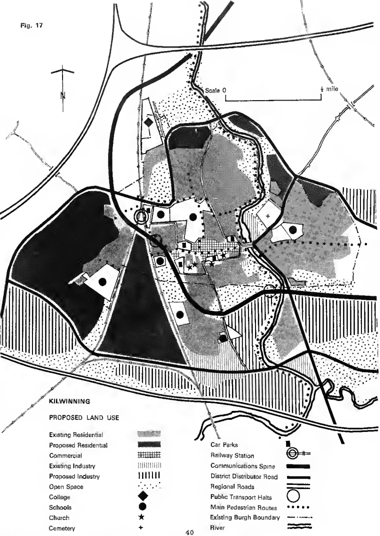
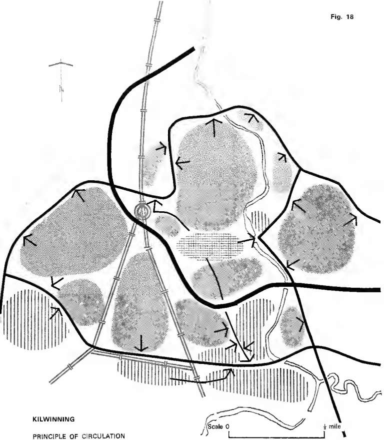

Scale 0
½ mile
N
KILWINNING
PROPOSED LAND USE
Existing Residential
Proposed Residential
Commercial
Existing Industry
Proposed Industry
Open Space
College
Schools
Church
Cemetery
Car Parks
Railway Station
Communications Spine
District Distributor Road
Regional Roads
Public Transport Halts
Main Pedestrian Routes
Existing Burgh Boundary
River

Fig. 18

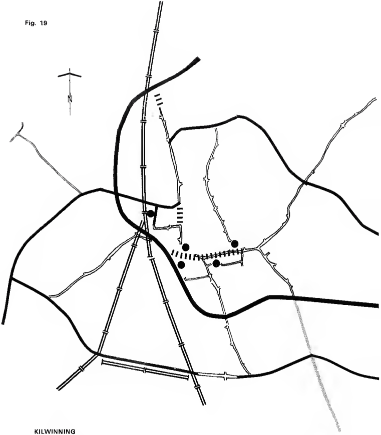


KILWINNING

PRINCIPLE OF CIRCULATION

Communications Spine	━
District Distributor	—
Local Distributor	─
Residential	▒
Commercial	▦
Industry	‖‖‖
Railway Station	◎

Fig. 19



KILWINNING

IMPLEMENTATION OF ROAD PROPOSALS

5 The People

A. REGIONAL INFLUENCES

98. In the consideration of population growth, employment, shopping provision, main roads, etc. a major urban development cannot be isolated from its setting and at Irvine this regional relationship is crucial to the total form and character of development. In the first place the expansion must be very carefully integrated with the existing fabric of Irvine and Kilwinning. But it is very apparent that these communities are an integral part of an urban complex extending as far as Ardrossan and cannot be separated from the life of an immediate region embracing the coast line of Irvine Bay and extending along the Irvine Valley to Kilmarnock and southwards to Ayr, and of a larger region which looks to Glasgow for major educational, shopping and other services.

99. The purpose of growth areas relies on the philosophy of concentrating resources at particular points of great potential for the benefit of wider areas. It is already clear from one point of view, exemplified by the recent attraction of industry, that the general area of Irvine is in modern conditions one of the best endowed in the West of Scotland. There is also the possibility that a number of communities in the locality may come to share its future growth and facilities thus providing the opportunity for wider labour markets and retail hinterlands.

100. In recommending a broad pattern of land use for the new town it is necessary, therefore, to make allowance for regional pressures of the kind that already exist or may arise as the general journey to work mobility of the Scottish population increases. Among the wide range of possible developments of the position affecting employment provision is that the incoming population will be supplemented by a net inflow of the existing and future regional population engaging in wider travel to work.

101. The present travel to work pattern of the new area may in part arise from short term pressures but it at least helps to identify the present characteristics and needs of Irvine and Kilwinning. It has, therefore, been studied in some detail on the basis of information supplied by the Ministry of Labour. The full results of the study are included in Appendix 3.

102. The area can be assumed to be that covered by the Ministry of Labour local office areas of Irvine and Kilwinning which in 1965 covered a total working population of 12,650. Apart from 870 workpeople who travelled between the two communities (particularly women from Kilwinning to Irvine) some 5,760 people travelled across the area boundaries daily; the percentage of the resident working population travelling out is high and includes a notable proportion going to Glasgow.
employment patterns and may be adopted from choice or pressure by part of the incoming population but it is considered that land should be allocated in the plan to provide for a reduction in the proportion of the population travelling from the area and for a longer term increase in inward flows.

103. Kilwinning is particularly dependent on the Stevenston area because of the I.C.I. works at Ardeer and their importance to Ardrossan is even more basic. This dependence will no doubt increase with the new nylon polymer plant which I.C.I. are providing at Ardeer. Irvine also has an important employment link with Kilmarnock with 645 people travelling out to work.

104. Irvine, therefore, occupies a pivotal position between the two employment centres of Stevenston and Kilmarnock and the Chemstrand development can be expected to establish a wide pattern of recruitment.

105. Mobility in the region is certainly increasing, particularly in the last decade in movements to and from Irvine itself. There has also been increased travel out of the region mainly to the Clyde Valley; of the 120,000 work people resident within 15 miles of Irvine, 5,560 now travel beyond the area to work, double the number doing so in 1954. Changing conditions, with the decline of old-established industries have induced a wider acceptance of longer daily work journeys which may be expected to continue and affect the integration of a new town within the general scene.

106. It is worthy of note that Ayrshire can be considered as a single unit since it approximates to a region, with coincident natural and administrative boundaries. Because of this degree of self-containment and the opportunity to plan on a regional scale there is real relevance in calculating the centroid or centre of gravity of the population in the County. This point would be the most accessible to the whole population of Ayrshire were all roads in the County equally effective. In 1961 the centroid lay in the parish of Symington, roughly midway between Kilmarnock and Ayr; by 2000 it is likely to have moved north to the parish of Kilmaurs, to the west of Kilmarnock. The distance west of Kilmarnock will depend upon the scale of expansion in the Irvine area. In fact the centroid falls in an area which is not only accessible in theory but which because of the new roadworks planned for central Ayrshire will become both the mathematical and natural centre of gravity (fig. 43, page 194, fig. 44, page 195).

107. With regard to shopping it is necessary to consider the possibility of the new town becoming a centre of regional importance. Ayrshire cannot be entirely self contained and Glasgow in particular must continue to exert some pull for specialist and selective shopping. At the level below Glasgow, however, for the kinds of shops and services which Ayr and Kilmarnock can provide the County is reasonably self contained and it is probable that the County boundary broadly coincides with the boundary between the influence of the Glasgow conurbation and the two major Ayrshire centres for the kind of shopping which the latter are able to provide.

108. Both the expansion programme for Irvine and the new regional roads will emphasise the centrality and strategic position of the area; and with the increase in population in the county and the need to provide additional shopping and central area services there should be an opportunity to develop in Irvine a centre of at least the standing of Ayr and Kilmarnock. No doubt Ayr and Kilmarnock will increase the scale of their services, but the major increase in population in the county is likely to justify an even wider range of facilities than is now provided.

B. COMMUNITY STRUCTURE

109. The community structure of the town will arise from the coming together of people for a variety of purposes - shopping, education, religious activities, political interests, hobbies, recreational pursuits, etc. Each activity will have a particular catchment area; a County primary school will serve a local housing area, a Roman Catholic primary school will have pupils from a larger area, a secondary school will be related perhaps to a group of primary schools. A Church of Scotland church may have parishioners from one section of the town whereas the Episcopal Church will serve a congregation gathered from the whole town area. Some clubs of minority interests will be organised on a town scale, others with more popular appeal may have several centres. Shopping will take place at the corner shop, in the local centre or in the central area.

110. Social life cannot be regulated to any fixed pattern. The inhabitants of one street or one section of the town will have many diverse interests. The members of one family even will often belong to many different groups based on church, education, work, recreation or politics. In fact social contacts are generally confined to the residents in small groups of houses or are enjoyed on a town scale by people with particular interests.

111. Public and community buildings should be sited in positions where they can be used to maximum advantage by the people living in the town. The

planning concept already described, with a series of districts along a communications spine and with the local shops and community facilities located around the public transport stop, permits rapid and convenient movement to a variety of specialist activities located at these points. To this extent the citizen can enjoy social contact in his immediate environment whilst being able to reach all the facilities of the town within a short time.

C. POPULATION STRUCTURE

112. New towns have certain basic similarities in population in that their age structures, birth rates and the particularly high proportion of skilled and professional persons create a unique population structure quite different to that in the great majority of established towns.

113. This new town differs from most others in Britain in that it already contains established towns at Irvine and Kilwinning. The combined population of these towns in 1951 was 21,300; this increased to 24,200 in 1961 and to 26,891 by 1965. Irvine had a larger increase of population than any other town in Ayrshire. The population projection for Ayrshire (Appendix 5, Table 12) indicates that discounting the expansion of Irvine the population of the County may increase from 342,822 in 1961 to 421,080 in 1984 and to 496,530 in 2000; a prospect of almost 50% increase in forty years. By far the greater part of this increase is likely to be outside the Burghs of Ayr and Kilmarnock.

114. The Secretary of State has intimated in the Memorandum on the Draft New Town (Irvine) Designation Order 1966 that "it is intended that the Development Corporation's housing programme should be devoted mainly to the support of incoming industry. If the maximum rate of employment growth is to be achieved, it is important not to restrict in any way the areas from which labour can be drawn...... It is recognised, however, that Glasgow workers have a valuable contribution to make to the expansion of Irvine and it is envisaged that as in the other New Towns the Development Corporation would conclude overspill agreements with Glasgow Corporation in due course".

115. A large part of the new population will, therefore, come to Irvine on the basis of industrial selection by which a firm in the new town obtains the bulk of its workers either through arrangements between the Ministry of Labour and local authorities or by some other method. At the same time as the employer is concerned with obtaining the right workers for his jobs the Development Corporation have an interest in ensuring that they obtain satisfactory tenants for their houses. The two processes should, therefore, go hand in hand. When the number of job vacancies and houses are in complete balance most of the population will be introduced by this method, the others being key workers in industry or in the various town services. These people may come from any part of the country or, indeed, from overseas if it is a

foreign firm that is developing in the new town. When there are more houses available than jobs it is possible for the Corporation to bring in either commuting members of the population or older retired persons. It is most desirable, however, that there should be an approximate balance between jobs and houses in the new town.

116. One of the features of new towns, often criticised, is the relative lack of older people since the predominance of young and growing families accentuates pressure on school places and, as the children grow up, on jobs. Another factor of the unbalanced population structure is that new towns contain comparatively few people lacking a degree of skill. In all age groups it tends to be the more energetic members of the population who move to a new town although it remains to be seen whether the established character of Irvine and Kilwinning will modify the basic similarities to the populations in other new towns.

117. It is necessary to make a forecast of the population, structure of the new town from the point of view of building houses of the right size and types and estimating the need for schools, shops, employment, recreation space and other basic elements in the town.

118. In addition to the structure of the incoming population an important factor is the rate at which the town develops, since this will partly determine the extent of the problem of peaks and troughs in the numbers of school children. Another factor is the rate at which families leave the town.

119. All these elements in the growth of the Irvine population will, as they appear, foreshadow future needs which can be planned for if recognised in advance. It is, therefore, very important that from the earliest movement of families to the new town a record system should be maintained as the basis for projections of the way in which the population will grow and require facilities of various kinds; this kind of advance planning is possible in new towns.

120. In this report a two stage population projection is included. Projection A is a detailed forecast of the growth of the population over the first five years. Projection B covers a longer period beyond that date; for this more general projection three different house building rates have been assumed to identify the possible timing of such items as the primary road network and the central areas. It is important that the production of houses should be constantly under review to establish the future population levels and their needs.

121. A detailed description of the projections appears in Appendix 4. Table 2 gives the projected population of the new town at various dates:

Table 2

IRVINE NEW TOWN POPULATION PROJECTION

Year 1st January	Rate of House Construction						Total population of the growth area			Immigrant Population (incl. natural increase)		
	Development Corporation			Private								
	1	2	3	1	2	3	1	2	3	1	2	3
1967	-	-	-	-	-	-	-	31,599	-	-	-	-
1968	-	200	-	-	100	-	-	32,943	-	-	-	-
1969	-	400	-	-	150	-	-	35, 111	-	-	-	-
1970	-	600	-	-	200	-	-	38,158	-	-	-	-
1971	-	800	-	-	250	-	-	42,061	-	-	-	-
1972	-	1,000	-	-	300	-	-	46,865	-	-	13,140	-
1973	750	1,000	1,250	-	330	-	50,604	51,412	51,820	16,568	17,361	18,160
1974	750	1 000	1,250	250	330	420	54,130	56,003	57,909	20,046	21,896	23,779
1975	750	1,000	1,250	250	330	420	57,727	60,685	63,712	23,599	26,621	29,512
1976	750	1,000	1,250	250	330	420	61,396	65,463	69,431	27,223	31,240	35,359
1977	750	1,000	1,250	250	330	420	65,136	70,331	75,668	30,918	36,053	41,323
1978	750	1,000	1,250	250	380	420	68,952	75,303	81,826	34,688	40,962	47,106
1979	750	1,000	1,250	250	330	420	72,845	80,372	88,107	38,534	45,969	53,610
1980	750	1,000	1,250	250	330	420	76,816	85,542	94,513	42,456	51,077	59,938
1981	750	1,000	1,250	250	330	420	80,865	90,815	101,048	46,457	56,286	66,394

Notes: Rate of House Construction (see Appendix 1) 1 = Reduced Rate 2 = Optimum Rate 3 = Increased Rate

D. EMPLOYMENT

Economic Trends

122. While there has been increased travel out of the area, its economic base has remained fairly static. Taking the broader area of the whole Irvine valley, extended to Ardrossan and Troon, it is clear that there is no inherent potential in the existing economic base to support a greatly increased population.

123. As table 3 (page 50) shows, any growth of service industries is being offset by a reduction of labour in farming and mining, and in the older manufacturing industries. Nonetheless, the area has shared strongly in the Scottish expansion of engineering and electrical goods manufacture for which the local authority bears great credit for their enterprise in establishing the industrial estate at Irvine.

124. Comparison of the changes in the employment structure of North Ayrshire over the periods 1959-1963 and 1960-1964, point to the dangers of drawing conclusions over short periods or between specific years. Even so, it may be supposed that at the low level now reached in employment in farming and mining further decline will be marginal to the main employment problems.

125. The large increase in distributive employment shown in table 3 is abnormal and probably does not imply a real trend but this growth is balanced by the equally fortuitous reduction in the strength of the construction force, apparently coincident with the completion of Hunterston Power Station.

126. Against this background there is a clear failure in the area to maintain the Scottish rate of growth in the field of insurance, banking, finance, professional and scientific services; this may be expected in an area which looks to Glasgow for much of its services of this kind, although Scotland itself has not kept pace with growth in the south.

127. In May, 1966, interviews with the major manufacturing firms employing over 300 persons in the area indicated an overall immediate need for a further 1,650 workers, and a potential for growth by an additional 1,800 - 4,100 workers up to 1970. Within four months of these interviews, external events had certainly altered the short term prospects for these firms. The Chairman of I.C.I. has said that the demand for nylon will not increase as fast as had been expected and the new Ardeer polymer plant will not be completed in 1967 as had been at first intended. Instead, work will be delayed to achieve completion late in 1968, with some redundancies occurring and recruitment being slowed down.

128. Against the uncertainty of the national economic situation and the relatively weak local background, it is impracticable to make any fine assessment of

Table 3

EMPLOYMENT STRUCTURE OF NORTH AYRSHIRE MANUFACTURING REGION * 1960-1964

	Insured Population 1960					Insured Population 1964					North Ayrshire		Scotland
	Males	Females	Total	% of Total		Males	Females	Total	% of Total		Numbers	% Change	% Change
				North Ayrshire	Scotland				North Ayrshire	Scotland			
PRIMARY INDUSTRIES	2.069	416	2,485	3.9	8.9	1.820	377	2,197	3.4	7.2	- 288	-11.6	-18.3
MANUFACTURING INDUSTRIES	21,218	11.525	32,741	50.8	34.9	21,315	11.370	32,685	50.6	33.8	- 56	- 0.2	- 2.2
Engineering and Electrical Goods	5,262	574	5.836	9.0	7.2	6.741	789	7,530	11.7	7.8	+1.694	+29.0	+ 8.8
Textiles	2,983	6,221	9.204	14.3	5,1	2.098	5,583	8.281	12.8	4.6	- 923	-10 0	- 8 7
Other Manufacturing Industries ϕ	12.971	4.730	17.701	27.5	22.8	11.876	4.998	16,874	26.1	21.4	- 827	- 4.7	- 4.2
SERVICE INDUSTRIES	18.158	10.635	28,793	44.7	56.1	17.708	12.005	29,713	46.0	59.0	+ 920	+ 3.2	+ 6 5
Construction	6,068	286	6,354	9.9	7.8	4,938	304	5,242	8.1	8.8	-1,112	-17.5	+15.0
Gas. Electricity & Water	1.068	199	1,267	2.0	1.4	1,573	227	1,800	2.6	1.5	+ 533	+42.1	+10.3
Transport & Communications	3.555	844	4,399	0.8	8.5	3.376	851	4,227	0.6	7.9	- 172	- 3.9	- 5.2
Distributive Trades	2,310	3,235	5.545	8.6	13.7	2.567	4,022	8,589	10.2	13.8	+1.044	+18.8	+ 1.9
Insurance, Banking & Finance	426	228	854	1.0	1.8	434	231	665	1.0	2.0	+ 11	+ 1.7	+10.2
Professional, Scientific Services	1,087	3.145	4,232	6.6	9.7	1,100	3,461	4.561	7.1	11 1	+ 329	+ 7.8	+15.5
Miscellaneous Services	1.724	2,280	4,004	6.2	8.0	1,942	2.344	4.286	6.8	8.5	+ 282	+ 7.0	+ 7.5
Public Administration	1,920	418	2,338	3.6	5.2	1,778	565	2,343	3.6	5.4	+ 5	+ 0.2	+ 4.5
EX-SERVICE PERSONNEL AND OTHER PERSONS NOT CLASSIFIED BY INDUSTRY	213	208	421	0.6	0.1	9	1	10	-	-	- 411	-97.8	-64.5
TOTAL	41,656	22,784	64.440	100.0	100.0	40.852	23,753	64.805	100.0	100.0	+ 165	+ 0.3	+ 1.2

* Comprising the following Local Office Areas of Ministry of Labour: Ardrossan. Stevenston, Kilwinning. Irvine. Troon. Kilmarnock, Stewarton. Newmilns.

ϕ Comprising principally chemicals: also the group of industries "Bricks. Pottery. Glass. Cement"; "Food and Drink"; "Clothing"; & miscellaneous metal industries including railway equipment. shipbuilding, etc.

the employment situation in the Irvine area; it is impossible for firms to make confident predictions of their potential over a short period, let alone over the first five years of the town's growth. The state of the employment market is liable to such short range fluctuations that the immediate industrial policy of the area can only be evolved with closer contact than has been practicable during the preparation of this plan.

129. The context for industrial development in North Ayrshire is essentially the potential growth of population. Table 5 : 13 in Appendix 5 indicates the possible growth of Ayrshire up to the year 2000, discounting the new town which has been separately assessed, and regarding only those overspill agreements negotiated up to January, 1965. If emigration from Scotland is to be reduced there must be new pressures for development in Ayrshire to meet the need for new houses and urban areas; this is, therefore, not an extravagant assessment of Ayrshire's possible population growth, although it supposes that there will be a reduction in emigration from Ayrshire proportionate to the national reduction envisaged in the Registrar General's Annual Report for 1963.

130. Upon this basis, Ayrshire's population could grow by almost 50% over the next 40 years, even apart from the growth of Irvine. By far the greater part of this increase would probably occur outside the Burghs of Ayr and Kilmarnock.

131. The new town occupies a strategic position for a range of economic activities. The success of the Irvine Industrial Estate and the diversification of interests in the I.C.I. group reflect the locational advantages of the area, while the White Paper on The Scottish Economy 1965 to 1970 emphasises the effect the improved communications system of Central Scotland will have in widening employment opportunities.

132. During the post war period Ayrshire has attracted a full share of new firms moving to Scotland, although its main industrial development has been in expansion of major firms in Kilmarnock including those established for a long period and those settling during or soon after the war.

133. The review of potential in the major firms of the Irvine area made in May, 1966 suggested a satisfactory rate of growth when the national economy recovers. Recent developments, including I.C.I., Skefco and Chemstrand, augur well for future growth, showing that in addition to a wide variety of firms introduced on the Irvine Industrial Estate, the locality attracts major firms of international standing.

134. Reference to the factors which normally operate in the location of industry gives reasonable grounds for confidence. The area contains a

considerable amount of flat land to provide suitable sites for industry. The proximity to existing ports provides the possibility of developing heavier processing industries. In the lighter modern industries, where freight transport costs are generally a very low proportion of total costs, the basic factors of available premises and labour, achieved by a new town advance factory programme and an industrial selection scheme for population, are greatly enhanced by the provision of amenities and easy personal communication.

135. In both these categories the Irvine area possesses a very real potential. For the English company moving north to develop sales in the Scottish market or indeed a firm moving from Glasgow, the existing and proposed transport facilities provide for close links with the industrial hub of the Clyde Valley. Ayrshire firms already supply components to the motor car industry at Linwood. Rail connections with England are provided at Kilmarnock but links to Carlisle and the south by road must be developed.

136. Irvine may also be further identified with the international connections provided at Prestwick. In an era when swift personal communication is vital to the conduct of business and overseas companies are looking for an accessible manufacturing base in the United Kingdom, Irvine's position as the nearest growth area to Prestwick Airport, combined with its favourable position in relation to Abbotsinch, offers hope of attracting the most modern types of industry.

137. The locality provides the attraction of clean air in combination with a climate which, affording the driest conditions in the mild west of Scotland, should not deter the immigration of managers and workers and their families from elsewhere. These conditions have helped the development of an attractive coastline with tourist facilities which enhances the position of the area for modern business.

138. Many of these advantages were mentioned by firms replying to the survey. Unfavourable comments were also made, particularly with regard to labour shortage, transport and housing problems and services, but these are all matters which will be dealt with in the new town context.

Employment Structure

139. New towns to date have generally been designed on the basis of fairly narrow predictions as to their pattern of development. In the main this has arisen from the context of their planning; the movement of population and industry from overcrowded cities as in the case of London, Birmingham and Liverpool new towns. With the growth area concept it is not easy to foresee the future relationship of Irvine to the industrial and work-journey pattern of Central Scotland. Perhaps the most that can be done is to establish the range

of possible extremes. In particular the need for additional industrial sites in the new town will depend on its relative importance as an importer or exporter of labour, on the proportion of the workers engaged in manufacturing industry and the density of the development in terms of workers per acre.

140. The trend towards the widening of labour markets has been stressed and whatever the apparent social and economic advantages of restricting work journeys and obtaining a local balance of population and jobs, it must be recognised that these aims are not only limiting but in many ways unpracticable. Employment structure is to some extent beyond local determination and in any case workers choose their own workplaces on the basis of their physical and employment mobilityand the opportunities provided by employers.

141. A study of the main employment groups in British towns of between 50,000 and 110,000 population shows a range of employment equivalent in numbers to between 15% and 85% of the population. There is also a very wide range covering the proportion of manufacturing employment to the total number of jobs. But the attractions of Irvine for industrialists as exemplified by recent developments and the statements in the Memorandum issued by the Secretary of State to the effect that Irvine should have a proper balance of industrial and commercial facilities at the various stages of its growth and that housing provision should be directed mainly to the general support of incoming industry, suggest that provision should be made in the plan for employment at least on the basis of the size of the incoming population. There will, of course, be in and out movements of workers.

142. It is unlikely that the proportion of the ultimate new town population requiring employment will vary appreciably above 45% and, therefore, the jobs required will be 45% of 55,000 or 24,750. Manufacturing industry may well represent 60% of employment or 14,850 jobs although the proportion could be as low as 40%.

Industrial Land Use

143. Apart from the number of jobs the amount of land to be reserved for industrial use will depend on the density of development in terms of workers per acre. Density is based on three factors:

(i) Floor space in buildings per employee
(ii) Site area outside buildings for open storage, yards, car parking, room for expansion, etc.
(iii) The area for roads, communal car parks and other public space.

144. Industrial densities are very variable and experience shows that they are continually falling. The Building Research Station calculated from a survey of 300 factories in the Midlands that 250 sq. ft. is required per worker and

a survey in Middlesex gave a figure of 258 sq. ft. and an average site cover of 54% for over 2,000 firms of all kinds in the county. Floor space requirements of firms moving from Birmingham and the West Midlands conurbation from 1945-1963 amounted to an average of nearly 400 sq. ft. per worker. It would seem to be prudent to assume an amount of 350 sq. ft. per worker.

145. On the question of the proportion of site likely to be covered by buildings there must be adequate provision for open storage yards, room for expansion, amenity space, etc. It is common for industrialists to seek land reserves for expansion of sufficient extent to double the size of the factory. In practice the pattern is for expansion to take place very unevenly between a small proportion of dynamic firms and a majority which expand slowly, if at all. An examination of the position at Crawley and Stevenage over a period of eleven years to 1961 shows that although one firm out of nine had expanded by as much as twenty times, fifty three out of ninety had not expanded at all. Storage needs are also variable. Assuming a fairly low average storage area, some space for prestige frontages, etc. it would be undesirable to have an average site cover of less than 40%. This would still allow for considerable expansion to cater for the great majority of industrialists; the firms with an abnormal expansion problem may well find it more satisfactory to move to another site in the town. There is also the method of having options on land for a limited period of years, provided that the land can be opened up for other factories if it is not required by the original industrialist.

146. On industrial estates a proportion of 30% of the factory site area should be reasonable for public roads and open space. For an indefinite period the expansion land of many factories will provide adequate car parking space but in the long run it will be necessary to arrange additional space and it is suggested that this should be on the basis of one car for every two workers, giving an area of 112 sq. ft. per worker for single level parking.

147. On these assumptions and areas, the following density is produced:

Floor space	350	sq. ft.	per	worker
Site area outside buildings	525	" "	"	"
Factory site area	875	" "	"	"
Public roads, etc.	262	" "	"	"
Car parking	112	" "	"	"
	1,249	" "	"	"

This is equivalent to 35 workers per acre.

148. At Irvine it is hoped that the development of an efficient public transport system will result in a reduction in car parking needs in industrial areas.

On the other hand the town may attract large projects of relatively low density. Nevertheless, land is a comparatively scarce commodity and care must be exercised in disposals for industrial purposes.

149. The reservation of industrial land has to take account of the role of the new town in the region, having regard to the possible employment relationships discussed in the report. A possible number of 14,850 jobs in manufacturing industry has been assessed; further provision should be made, however, for 15% of the working population having jobs in types of service trade which are appropriate to industrial areas - construction, service undertakings, wholesale distribution, laundries, etc. This would give a total of 18,560 jobs or 530 acres of land. But some provision of employment above the equivalent required for the additional population of 55,000 should be made for a number of reasons.

150. As stated in Chapter 6, a number of reserve sites beyond those necessary for the 55,000 population have been provided; these will allow for a measure of natural growth or increased immigration to the town.

151. The focal location of Irvine which will be enhanced by development of regional communications, may create conditions in which employed persons from the surrounding region will take up work in Irvine in large numbers, sufficient to develop a significant net daily gain of commuters to the new town. The plan must have sufficient flexibility in land use and its communication system to allow for this.

152. Other factors may be broadly in balance. If employment opportunities develop in the new town on the scale envisaged it might be that part of the existing daily outflow of commuters will switch to employment in Irvine. However, there may also be decline in certain industrial groups existing in the new town and at this stage there is no reason to assume that the daily outflow of workers from the area will be greatly reduced.

153. The question arises as to whether sufficient jobs required to stabilise employment in the new town will arise in development of its newer industries. The survey of large firms undertaken in May, 1966 suggested that following what was a period of preparation for many of them, the growth of new jobs might balance out the existing unemployment pressures by the time the new town had got under way. Since May, however, there has certainly been a revision by I. C. I. of their immediate expectations of the Ardeer polymer plant, and even if the effect of the national financial situation could be discounted it would remain true that the unemployment situation is more complex than simply equating jobs available with numbers unemployed.

154. In the light of this appreciation, the manner in which industrial development proceeds from its present phase is not certain but it would certainly be advisable to reserve land at this stage for an additional 6,000 manufacturing or similar jobs in the new town. On this basis, some 700 acres of land would be required.

155. It will be important to manage this land to achieve its maximum potential. It is possible that regional pressures will combine in more extreme form than has been considered, or there may be need to accommodate a number of specially large projects.

E. SHOPPING

156. The pattern of retail trade in Britain has undergone considerable changes during the past decade with the increased use of the car for shopping, the coming of the supermarket, the increased strength of the multiple trader coupled with the relative decline of the independent trader and a general move towards larger more efficient trading units. The change is likely to continue with the introduction of special discount stores and automatic vending. Any shopping centre designed today must take account of this position and provide floor space which is sufficiently flexible in design to suit changing conditions and methods of retail distribution. The introduction of covered and enclosed shopping areas in the U.S.A. has had a considerable beneficial effect on trade and there is no doubt that people appreciate comfortable conditions when shopping.

157. The existing shopping facilities of Irvine and Kilwinning must be taken into account when estimating the amount of new shopping required in the new town. The provision must be viewed against the future growth of population not only of the new town but also that of the rest of Ayrshire. It is clear that with this growth and redistribution of population must also come a growth and a relative redistribution of shopping facilities.

158. For the more frequent shopping requirements, where people are often within easy walking distance of the shops, it is a question of providing a certain standard of shopping facilities relative to the needs of the immediate population. It is only when one comes to the more infrequent and specialist shopping needs that the regional forces come into play. These facilities require a large supporting population and tend to locate in those centres which are most accessible to the most number of people. At present Ayrshire relies upon the City centre of Glasgow and to a lesser extent the town centres of Ayr and Kilmarnock for these facilities.

159. In the future, however, with the increased use of cars for this type of shopping, the new regional roads and the expansion programme for Irvine,

increased emphasis will be placed upon the centre in North Ayrshire which can provide the right kind of shopping and central area services and accommodate the movement and parking of the private car. It must be concluded that the possibility of this centre being associated with Irvine new town must be allowed for in the plan. Fig. 43, page 194, and fig. 44, page 195, and table 5·13 in Appendix 5 indicate the strategic position occupied by the area relative to the future distribution of the population of Ayrshire.

160. In the plan for the new town a three tier hierarchy of shopping facilities is proposed. At the lowest level of shopping activity it is planned to provide for the daily needs of the population by means of "corner" shops, each conveniently located to serve some 400 families.

161. At the second level of shopping it is proposed to establish district centres to cater for the twice weekly needs of the district population. These districts will vary in size but the centres will be capable of supporting more than just the single trader in each category. This will not only increase the choice open to the housewife and help to reduce prices through competition, but will also by virtue of this size of shopping group tend to attract a greater volume of trade to each trader than would be the case if each trade was represented by only one establishment.

162. In our estimates of the amount of shopping space required in local and district centre shops we have assumed that the demand for this kind of shopping will be the same as that in Scottish towns of a similar size.

163. Occupying the top position in the hierarchy is the central area. This should be conveniently located to serve not only the walk-in population of the centre and the nearby districts but also the population of the existing towns of Irvine and Kilwinning and the new linear development who will have access to the central area either by public transport or private car. In addition, because of its relationship to the regional road network, the centre must be capable of serving shoppers travelling by car from a large hinterland.

164. Because of the many unknown quantities in the situation, such as the possible changes in retail trading, the redevelopment of the existing centres of Kilmarnock and Ayr, the exact rate of growth of population and the timing of the regional road construction we have considered it prudent to forecast a range of shopping accommodation for the new town.

165. Based upon an analysis of the amount of money spent in shops in all towns in Britain outside Greater London with 20,000 to 200,000 population we have arrived at the range of accommodation required in the town as a whole. From this we have deducted the amount of shopping space provided at the local

and district levels to arrive at the range of accommodation for the central area for a given population. These details are given in Appendix 5 and can be summarised in terms of average values as follows:

Table 4

RETAIL SHOPPING AREAS - CALCULATED VALUE '000 SQ.FT. GROSS

Population of the new town	Total	Central Area	Corner Shops and District Centres
30,000	196	52	144
40,000	280	102	178
50,000	364	140	224
60,000	450	202	248
70,000	535	252	283
80,000	619	302	317
90,000	706	353	353
100,000	790	404	386

166. The location of the central area will depend on a number of considerations. There are two main possibilities; the redevelopment and expansion of the existing centre at Irvine or Kilwinning, or the development of a new centre. Although there would be advantages in expanding one of the existing centres in terms of existing patterns of local shopping and the enhanced prospects for existing traders there would be many disadvantages. A vast amount of redevelopment would be involved and there would be a time delay in acquiring so many interests; either location would be off centre relative to the distribution of incoming population; major road works and the provision of large scale parking facilities would present great difficulties; relocation problems would arise and no adequate central area would exist for many years. With a new centre the site could be chosen in relation to the overall plan of the town and the necessary roadworks and car parking facilities could be provided on a comprehensive basis. The centre could be designed on the most modern lines to provide an attraction for shoppers over a wide area. The existing centres at Irvine and Kilwinning would continue to function as district centres.

167. For these reasons it is considered that an entirely new centre should be planned. If this is to be of regional significance the site should be related to the town communications system and to the larger regional system. The location of the centre must, therefore, be considered with the lines of the regional roads and in relation to its potential hinterland.

168. The centre must be placed to draw from the Saltcoats, Stevenston, Ardrossan group of towns and it is concluded that it should be between Irvine and Kilwinning and be related to the regional road system so closely that it can develop as a major regional centre.

169. In the implementation of the planning proposals it is essential that the short term expedient measures which may appear at first sight to be most attractive should be resisted in the best interests of the new town as a whole. In particular, it is important to avoid a build up of central area facilities in either of the existing centres of Irvine and Kilwinning or in any of the district centres during the early period of development.

170. By dividing the market such a growth could inhibit the development of the central area. The preferred strategy must be to keep the commercial growth of Irvine, Kilwinning and the district centres to a minimum during the early years and to encourage the establishment of the central area as clearly as possible.

171. This restriction in the build up of shopping in Irvine and Kilwinning town centres will be most difficult to attain in view of the very strong pressures for development and redevelopment which will exist in the early years of the growth of the new town.

172. It is proposed that these existing centres should become district centres within the new town and that they should increase their present level of sales to a limited extent. The amount of shopping and service trade floor space required ultimately in Irvine district centre will be approximately 123,500 sq. ft., a decrease of some 16,000 sq. ft. on the existing provision. The amount of space required ultimately in Kilwinning district centre will be some 62,000 sq. ft., an increase of approximately 25,000 sq. ft. on the existing provision.

173. As certain outworn shopping areas of the two existing centres become ripe for renewal in the future, the opportunity should be taken to reassess the type and intensity of land use of the particular site with a view to providing an effective, compact district shopping centre in each town.

174. In the early years the established and the immigrant population will have to rely upon such centres as Glasgow, Kilmarnock and Ayr for their more infrequent specialist shopping and other needs. They will have the advantage of being able to use the existing district centres and local shops, however, and this should tend to discourage the large numbers of van traders which are to be found in most new towns.

175. By the time the first people move into houses in and near the central area it will be possible to commence the construction of the first central area shops. These will be of a local and district centre type and will depend upon walk in trade from these areas. From this period onwards the speed at which the centre grows will depend directly upon the growth of population in the new

town and its hinterland and the accessibility and attraction of this centre relative to that of other competing centres.

176. In Appendix 5 it is estimated that for a town population of 60,000 some 313,000 sq. ft. of retail and service trade floor space (excluding motor trades) may be required, the amount depending on the degree of success of the town centre. A total population level of 50,000 - 60,000 may be regarded as the minimum for a large growth in the central area facilities as at this level it would be economically feasible for the town to support a departmental store of 15,000 to 25,000 sq. ft.

177. The date at which this level of population will be reached will, of course, depend upon the rate of growth of industry and the building of houses for the incoming families. If a reasonable rate of house construction is achieved and maintained a population of 50,000 could be reached by about 1973.

178. At the local and district level of shopping a basis has been suggested for the programming and allocation of retail floor space in the new town. The estimated provision for the central area must be subject to revision on the basis of the periodic assessments of the extent of the retail trading hinterland. In this way, the range can be narrowed to provide a valid brief for each successive stage in the construction of the centre.

6 Housing

179. Housing with its associated community facilities forms the largest land use element, apart from open space and other open land; it will, therefore, make a significant impact on the overall appearance of the town. By sheer weight of numbers housing can make or mar the total environment; at the same time it presents one of the most difficult aspects of town design with the need to produce a coherent result without dullness on the one hand or chaotic variety on the other. Housing design depends for quality on the integration of buildings, layout and landscape and it is important that this should be achieved at Irvine if the town is to be a good place in which to live.

180. Housing will be influenced by a number of factors, including site conditions, design standards, methods of construction, household structure and costs, both capital and maintenance. The following check list sets out some of the points which should be considered in the drawing up of a planning brief for the design of a housing area. This should apply to all new housing, Corporation, local authority, housing association or private enterprise:

i. Location within the town

ii. Relationship of site to town road network including problem of noise

iii. Views into and out of the site

iv. Site conditions including levels, existence of natural features - trees, woods, streams, etc. - and precautions to preserve existing trees

v. Protection from climatic conditions particularly in areas of open space and footpaths and consideration of micro-climatic conditions on the particular site

vi. Maximum separation of pedestrians and vehicles

vii. Provision of one car storage space for every dwelling with reserve accommodation for additional cars beyond this standard plus parking space for visitors cars and service vehicles on a basis of one space to every two houses. The full provision will not, of course, be required in the early stages but the necessary space should be reserved.

viii. Integration of dwelling design and layout to achieve convenient and safe access, adequate privacy and opportunities for social contact

ix. Vehicular access to within 150' of all dwellings. Turning space for service vehicles

x. Adequate daylighting and sunlighting standards

xi. Privacy both inside and immediately outside the dwelling

xii. Need for maximum number of family dwellings to be near ground level

xiii. Flexibility in the design of housing areas to provide for future changes in requirements and for unforeseen needs

xiv. Relationship of housing to social service provision including open space and playgrounds, schools, community halls, shops

xv. Need to build a range of dwelling sizes in every major housing group to ensure that at each stage accommodation is provided broadly in relation to the household structure of the population

xvi. Proportions of dwellings in low, medium and high rise blocks

xvii. Maximum amenity within housing areas with careful attention to design of public spaces including details of fencing and walling, steps, paving and landscaping

xviii. Method of refuse collection including type of container, type of collection and vehicle turning space

xix. Routing of underground services including telephone

xx. S. D. D. standards and maximum flexibility in the use of space within dwellings

xxi. Whole house heating, avoiding the delivery of solid fuel to every house. Consideration should be given to the alternative possibilities of district heating, electricity, gas and piped oil

xxii. Possible need for industrialised methods of building if speed is to be maintained in the housing programme. This may well affect housing layout

xxiii. Overall target cost to cover all aspects of design; buildings, roads and pavings, townscape and landscape

181. The solutions which will be evolved from consideration of these factors to achieve the best possible living conditions are likely to be far removed from most of the post-war housing estates. Lasting quality depends on an

immense amount of sympathetic understanding and care being bestowed on housing design by all concerned. Worthwhile results are unlikely to accrue from the all too usual process of fronting inappropriate standard house types along an arbitrary pattern of roads and adding a few trees and shrubs in the cause of amenity. This country has too many examples of this unthinking approach and the Designated Area has its share.

182. With the planning concept proposed for Irvine New Town it is essential that the design of housing areas should be related to the planning principles which apply to the districts along the communications spine as described in paragraph 17 of this report and further amplified in Appendix II of our Northampton, Bedford and North Bucks Study, prepared for the Minister of Housing and Local Government. *

183. A residential district will be subdivided by topography, structure and use into inter-related clusters of buildings which should be the basic elements in the design of the district. The smaller community facilities such as corner shops and tenants meeting rooms should be distributed amonst them both for convenience and to provide local focii, and major playgrounds may be sited in the spaces between the clusters. Varisty and a sense of place in the district will be best achieved by exploiting the factors which determine each basic element, and it is essential that, within each one, the choice of materials, forms and techniques should be consistent and should contribute to the coherence of the cluster.

184. Each local housing group will provide for a range of family sizes within a restricted band of the socio/economic spectrum and for choice in the way of life of the family. Social studies suggest that personal relationships and group identity derived from geographical position extend over a comparatively small area around each home, and that neighbourliness is confined to the street or precinct which rarely exceeds a hundred houses. Thus the cluster of development which is defined by topography and traffic needs may have several subtle sub-divisions.

185. The density of the development, the juxtaposition of houses, doors and windows and fences, the position of courtyards and playspaces and the alignment of routes for pedestrians and cars will either favour or preclude chance encounters and the development of relationships. The home is both a retreat and a meeting place and it is very important that the design of each house and its immediate surroundings should permit the occupants to choose between seclusion and sociability as mood and circumstances suggest from time to time. However, social patterns are complex and, as yet, ill charted. Although the design of individual houses and the grouping of houses will have an effect on the patterns of neighbourliness, a person will belong to many other social groups

* H.M.S.O., 1965

based on religion, recreation, work, education, etc., which to varying degrees, will be independent of geographical position. Thus the communications systems in and between the districts and within the region become significant factors in the growth of these relationships which will flourish in proportion to the ease of movement.

186. Only in exceptional circumstances should underground or multi-storey garages be proposed in residential areas. The bulk of the cars will be stored either in groups or, more expensively, in association with individual houses. The form of the accommodation and the phasing of its provision will depend upon economic circumstances and developments in the manufacture and use of the car. Although at present a high proportion of lock up garages will be required, it may be that in the future a significant proportion of car owners would prefer to pay rather less, and accept personal open parking space. Private group storage space should be dispersed so as to reduce the visual problems of mass garaging and parking, and to reduce the distance between house and car. These areas will become meeting places insofar as cars are cleaned and repaired there and children are attracted by the hard surfaces and activity, and this must be recognised in the detail design. Both visitor parking places and private car storage should be sited between the house and the collector road, so that an orderly pattern of movement is established in accordance with the design principles of districts.

187. With regard to open space, the objective should be to provide a co-ordinated plan for public open space and other land uses which is derived from the existing landscape and topography and is in phase with the needs of the community. Although several agencies will be responsible for implementing the programme, the best results would be obtained if the final design decisions could be delegated to the Development Corporation. In any event, it is important that responsibilities should be defined and policies agreed before the details of individual districts are committed. Within the housing areas, it is the incidental open spaces and children's playgrounds that must be considered; these are dealt with in detail in Chapter 9.

188. A basic residential district is illustrated in fig. 20, page 69 and incorporates a pattern based on these principles of land use and movement. The community facilities, secondary schools, local shops, churches, etc. are grouped around the public transport stop which leads to the other districts and facilities of the town; industry, central area, parkland, etc.

189. The extent of the housing area is determined by the walking distance from the group of local facilities which is generally not more than half a mile. Traffic moves outwards from the housing groups and the local centre along service and local distributor roads to the district distributor road which defines the edge of the district and where the vehicle has right of way.

190. Although the main footpaths radiate from the district centre, provision must be made for safe, convenient and pleasant pedestrian movements between districts and between different localities within a district.

191. A local housing group may be served by one or more roads. However, the size and population of a residential area served by one road with frontage development will be determined by:

i. Maximum acceptable volume of moving traffic in conjunction with frontage, pedestrian activity, parking, etc.
ii. Car ownership and usage factors
iii. Net density
iv. Occupancy rate
v. Topography and site conditions

192. The size and population of a residential district will be determined by:

i. Walking distance to local shops, schools, public transport stop, etc.
ii. Gross density
iii. Capacity characteristics of the district distributor road and connections
iv. Peak vehicle generation of housing sub-unit
v. Topography and site conditions

193. Housing and environmental standards adopted in the new town will determine to a considerable extent the range of densities and patterns of development suitable for the residential areas. The amount of land required for housing has been calculated at a gross density of 40 persons per acre for public and 25 persons per acre for private housing. This density is related to all the land occupied by dwellings, gardens, roads, local shops, primary schools and open space within the housing area. For 55,000 people this would give a total of about 1,600 acres.

194. The densities of housing in the new town will, of course, vary according to the type of houses and location on the site and it is suggested at this stage that net densities should range between 25 and 75 persons per acre. With such a range it should be possible to achieve housing layouts with mainly low rise housing with reasonable proportions of flats and maisonettes and with full facilities for car movement and parking. It is desirable that there should be a concentration of population associated with the central area and high buildings could be erected here. Similarly, within a district there could

he more intensive use of the land around the local centre and the more dispersed, car orientated families could be located towards the outer edge near the district distributor road.

195. It will be necessary to relate the future population structure of Irvine to the accommodation appropriate to the differing households. For this the results of the 10% sample of the Harlow New Town population carried out in 1961 by the Economist Intelligence Unit are important; this survey has provided a more solid hase for predictions of household structure and housing need than has been available before.

196. In deciding on the sizes of the houses to be built in Irvine it is necessary to predict the likely structure of households and the extent to which families are fitted to the dwellings best suited to them; over and above these matters, important assumptions have to be made as to how much space is to be provided within dwellings to cope with the future growth of the young families and to what extent spare rooms and separate rooms for unmarried members of families are provided.

197. The programmes suggested in Table 5 translate the 1961 Harlow structure into matching ranges of dwellings based upon various fitting standards. The method is further explained in Appendix 6.

198. The likelihood is that the incoming Irvine population will be broadly similar to that of Harlow at the same stage of development and, therefore, houses huilt in the sizes suggested should meet the needs of the first few years. As the town grows there must be periodical adjustments of the housing programme to take account of the known population structure.

199. Although a considerable amount of the new housing in Irvine New Town will be built and rented by the Development Corporation there will also be local authority housing and in addition there is likely to he a considerable need for better standard housing at higher rents or for sale and for the disposal of sites on which individuals or developers can build houses. The demand is likely to be as follows:

- i. Better standard housing, provided hy the Corporation for renting or for sale
- ii. Houses built by housing associations
- iii. Individual plots on which owner-occupiers can erect houses
- iv. Larger areas of land on which houses can be huilt as a speculation by private developers

200. Ultimate decisions on total requirements in the town can only be based on experience to be gained as development proceeds hut the trend towards house ownership will undoubtedly increase. It is suggested at present

Table 5

PROPOSED BALANCE OF DWELLINGS

Bedrooms per dwelling	1	2	3		4			5			
	1d	1d + 1s	2d + 1s	1d + 2s	3d + 1s	2d + 2s	1d + 3s	3d + 2s	2d + 3s	4d + 2s	3d + 3s
No spare bedspace	21.7	28.2	10.6	28.2	0	5.3	3.4	1.9	0.6	0	0.1
1 spare bedspace for every second house	13.5	23.7	19.4	26.6	2.9	9.6	1.8	1.3	0.7	0.5	0
1 spare bedspace per house	5.3	19.4	28.2	25.1	4.6	14.0	0	1.8	0.7	0.5	0.3

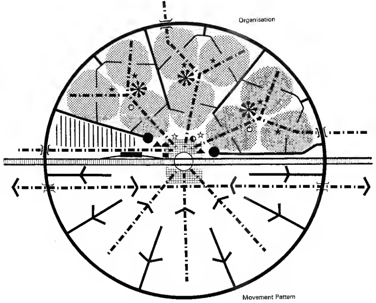
that up to 30% of the housing may need to be of the types set out above.

201. In terms of physical planning, differences in housing tenure often become associated with differences of status and this must have an effect on the location of these housing areas. It would be preferable if small groups of owner-occupied houses could be sited in various parts of the town and so prevent one main section becoming characterised in terms of standards. Suitable sites would have some individual character and a measure of withdrawal or separate access. It is important that all housing development should conform with the overall planning principles in this report and that the design of dwellings and layout should be entrusted to an architect. Each area should be subject to a planning brief prepared by the Corporation and covering the points set out in paragraph 180.

202. Common social amenities such as shops, schools and meeting halls would, of course, be shared by all families in an area. Stress has been laid on the need for a wide variety of housing in Irvine because if the new town is to be successful in terms of its social and community structure it must have a varied population with a diversification of interests and abilities. It is particularly important that people who can contribute leadership to the town and its organisations should be encouraged to live in Irvine rather than in the surrounding villages and towns.

203. In the plan housing takes up a considerable part of the development between Drybridge and Kilwinning and has been carefully related to the detailed land form as explained in paragraph 40 (fig. 6, page 18). In total, some 2, 100 acres of land have been reserved for housing and ancillary uses; this would provide a number of reserve sites beyond those necessary for the 55, 000 population. This will give considerable flexibility to the plan and will, if necessary, also allow for a measure of natural growth during the building of the new town and for a period thereafter, or for increased immigration.

Fig. 20



RESIDENTIAL DISTRICT

Housing	░	Library	■
Primary Schools	✳	Health Centre	◓
District Centre	▦	Community/Youth Centre	◐
Secondary School or Light Industry	‖‖‖‖	Filling and Service Station	▥
		Public Communications Spine and Stop	▭
Tenants' Meeting Room	○	Car Park	●
Corner Shop	★	District Distributor Road	▬
Pub	☆	Local Distributor Road	—
Church	▲	Main Footpaths	·· ▬ ··

7 Industry

204. The siting of industrial areas has an important effect on traffic conditions in a town since industry is a major traffic generator. This is particularly noticeable on the journeys to and from work. In addition there is a considerable amount of heavy goods traffic and, therefore, communications to the regional traffic routes should be direct and should not involve passing through residential areas.

205. A total of about 720 acres of land, suitable as regards mineral conditions and levels, has been reserved for industry, mainly to the south of Kilwinning, north east and south of Dreghorn and at Drybridge (fig. 6, page 18). All the sites are related to the communications spine to ensure easy access between the residential areas and the industrial estates. In addition a number of small sites are distributed throughout the residential areas on locations adjoining the spine. Some of these buildings could be in the form of flatted factories and all would be particularly suitable for the employment of female workers who could live nearby. The type of industry would need careful selection to avoid nuisance.

206. In the design of the estates there is as much need to give careful attention to the environment as in the other areas of the town. A high standard of design and planning can have a good effect on productivity and in attracting progressive industrialists. There should be reasonable separation of vehicles and pedestrians, particularly in the provision of footpaths from car parks and bus stops to factory entrances and in direct links by main footpaths to the housing areas.

207. Factory buildings should be well designed to present an attractive appearance from all aspects and particular attention should be paid to open storage areas which should be screened in such a way as to produce a coherent relationship with the factory buildings. Car parking for executives and visitors can be arranged near to the individual buildings but it would be preferable to plan major car parks in selected positions to ensure maximum efficiency in the use of land. Provision should be made for open spaces for games and sitting out at lunchtime and for other communal facilities and steps

should be taken to ensure that adequate resources are devoted to proper landscaping of the sites and surroundings.

208. Factory buildings are likely to fall into one of four main categories:

i. The large purpose built factory, probably self-contained as regards welfare and canteen facilities

ii. The factory varying in size from 20,000 to 150,000 sq. ft. built specially to meet the requirements of a particular industry

iii. Standard factories of 10,000 to 60,000 sq. ft. A well designed standard factory with good overall lighting can be used for a wide range of industrial processes

iv. Factory space up to 5,000 sq. ft. either in single storey buildings or in blocks of three or four storeys for the small firm or the self-employed craftsman.

8 Central Area

209. The central area of the new town is located to the south east of Girdle Toll, and the existing A736 from Irvine to Glasgow. Access for regional traffic is from the main town road to the north and for town traffic from the main town primary road to the south. Along this road runs the main public transport route bisecting the site north west to south east. To the east and west of the site, regional roads complete the strategic location of a centre well linked to its hinterland (fig. 22, page 78).

210. A network of footpaths links the centre to the town and existing areas, bringing some 18,000 people within walking distance (fig. 22, page 78).

211. The site is gently undulating and falls gradually from the housing areas to the north and south down to the fairly deep and moderately quick flowing Annick Water with a crossfall of 30 ft. to the south and 10 ft. to the north. Towards both ends of the site are large wooded areas of high landscape value. The south western end of the site runs out into the town park and golf courses whilst at the east and west ends there are open space and possible expansion areas. The total area is some 220 acres (fig. 21, page 77).

212. It is proposed that the centre should contain the main shops as well as offices and public, cultural and recreation buildings. Housing accommodation for some 6,000 people is included to help create a more lively and diverse atmosphere and to link the centre more effectively with the town (fig. 23, page 79).

213. The probable scope of the accommodation to be provided for an ultimate population of 90,000 in the new town can he summarised as follows:

Retail Space (see Chapter 5 and Appendix 5)
Offices
Central and Local Government Offices
Police Station
Magistrate's Court
Technical College
Post Office
Health Clinic
Library

Hotels
Sports Centre - swimming pool and ice rink
Bowling Alley
Petrol Stations
Bus Station
Telephone Exchange
Dance Hall
Cinema
Theatre
Churches
Housing for 6,000 people with primary and nursery schools
Parking space for vehicles and goods vehicles (see Appendix 8)

214. To enable a three dimensional design to be prepared a brief must be worked out for the accommodation required, and also the planning principles and factors to be incorporated. These can be listed as follows:

i. Access for vehicular traffic to the site will be from the main town roads to the north and south. Regional traffic and some town traffic has access from the northerly road, whilst town traffic has access from the communications spine road to the south of the centre. Public transport services operate along the spine road which crosses the centre of the site

ii. Within the centre, there should be some separation of the various classes of vehicles: private cars moving to parking areas, service and goods vehicles moving to unloading bays, public transport setting down passengers. Each class has its particular rate of movement and functional requirements (fig. 24, page 80).

iii. The roads and car parks should be arranged so as to be closely related to the main generators of activity particularly shops and offices and at the same time allow for an even distribution of vehicular movement over the site (fig. 24, page 80). Office workers and retail employees should use the less convenient long term multi-storey car parks, thus leaving vacant the more convenient car parks for shoppers

iv. Parking areas for cars should be arranged so that not more than about 800 cars have to use each exit point; otherwise, congestion will occur. Parking should be self-drive, since mechanical methods tend to be unpopular with users and there should be easy access to the parked vehicle at all times for the storage of purchases. In siting and arranging the parks, it is important that the cars should not be allowed to dominate the centre visually - the pedestrian approach should not be through a vast sea of parked cars as in the American regional centres.

v. Pedestrian access will be from the town footpath system, the town park and from the car parks, and bus stops within the centre. Provision should be made in the design of different levels for handicapped people to use the centre.

vi. There must be the maximum separation of pedestrians and vehicles in the centre.

vii. The pedestrian and vehicle areas must be designed to take account of the differing rates of movement. The pedestrian areas can have a more intimate scale with the spaces regulated in size in relation to the various traffic generators.

viii. The site conditions and levels should be exploited to achieve an integrated compact design for the centre, deriving the maximum benefit from the existing landscape and contrasting with the rolling nature of the surrounding countryside.

ix. Studies into the effect of weather conditions should be carried out as the whole area of the new town is affected by the strong south west winds and the cold north east winds. These may well lead to the need for protection within the centre, possibly incorporating enclosed heated shopping halls to provide pleasant conditions.

x. The overall plan should be flexible so that the inevitable adjustments can be made as the town is developed without unfortunate results. There must also be the maximum flexibility in the design of the buildings to allow for changes in retailing methods and for future growth patterns at present unforeseen. This is likely to affect the structural systems to be adopted; there would be advantages in keeping this simple and large in scale.

xi. Provision should be made for the maximum use of common services of all kinds, including refuse disposal, cleaning, heating, fire protection, etc.

xii. The centre should be integrated with the main town area, and particular attention should be paid to the relationship of town centre and housing.

xiii. The centre must be viable and cost analyses should be prepared to test designs. The town development has been programmed so that it may grow from the centre outwards and thus establish the centre as the focus (fig. 30, page 114, fig. 31, page 115). This arrangement is vital to the centre's viability in the early stages.

xiv. The quality and variety of shops is an important aspect in the attractiveness of a shopping centre. Good accessibility and parking facilities well related to an efficient arrangement of the right type of shops and attractions are ingredients of a successful centre.

xv. The social concept of the centre should be explored further to give the maximum variety, vitality and diversity from the disposition of uses. The town square should act as the heart of the town and a focus of all activities both economically and socially. There is need for identification within the centre with areas of distinct and differing architectural character - for quiet use, entertainment, housing, government buildings and retail shopping, although these uses should overlap to some extent

xvi. Phasing is an important element in the design of the centre and should progress in step with the growth of the town (fig. 27, page 83). Ideally, there should be a cross section of functions provided at each stage of the town, although in practice, this has to be related to demand to ensure that development is economically viable.

215. As the town is designed to allow for growth, so is the town centre arranged as the focus of the whole town in such a way that in due course it may become a regional attraction. To cover this eventuality, a flexible structure and composition incorporating the most appropriate rate of growth and concentration should be evolved so that it may be expanded into a regional centre.

216. Important aspects to be considered in phasing are the close proximity of early housing and the public transport line, the early commencement of the town square complex as a focus to the town, and the establishment of a framework with the earliest phases forming a strong link across the central communications spine so that this framework may be expanded in a balanced outward direction without developing one side of the spine to the detriment of the other.

217. Phasing should, of course, be related to the overall pedestrian/vehicular circulation and car parking arrangement indicated on fig. 24, page 80, the most efficient use being made of the central section before expanding the framework outwards.

218. It should be noted that one of the advantages of adopting a policy of rapid movement along the communications spine is that the town centre can be started at an early date with the district shopping element on the fringe of the centre, adjacent to the incoming pedestrian routes, primarily for local shoppers who live nearby.

219. Various studies have been made into the possible form of the centre and are illustrated in figs. 23 - 26, pages 79 - 82. A compact centre based on a framework allowing further expansion to take place in an outward direction has been aimed at and this involves a measure of vertical separation of vehicles and pedestrians. A careful distribution of various types of car parking is integrated with an expandable road system, and related to the uses in the centre, which is serviced from below.

220. The Irvine centre will provide a climax to the town in the social and architectural senses and will be a symbol of the new town. By virtue of its position it will dominate the town and its buildings will stand high above the surroundings overlooking the Eglinton and Corsehill areas. From its housing, offices and rooftop restaurants there will be superb views of the town, the rolling countryside and Irvine Bay.

221. Footpaths will converge from other areas, through the town centre housing, bringing pedestrians into comfortable, safe and convenient concourses free from the hazards of traffic and weather. There will be a progression of lively and stimulating spaces in the shopping, civic and entertainment areas leading to the town square which will be the focus of activity.

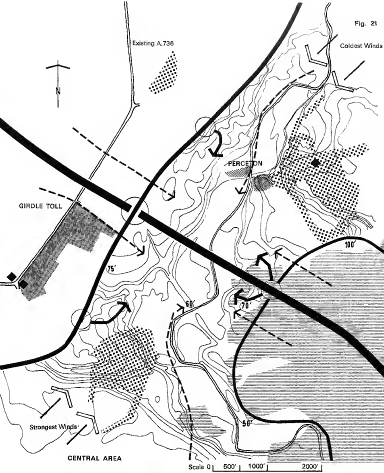
222. The entertainment and civic areas will be close to the river adjoining the town square. Here terraces will step down to the river, where cafes, pubs, clubs and restaurants with sitting out areas on the river bank will provide a setting for leisurely activities. On the higher terraces, hotels, churches, housing and offices will create an urban environment.

223. People coming by public transport will rise by escalators or lifts onto the main retail level whilst car drivers and passengers will alight below their destination on one of two decks of car parks under the commercial, civic and entertainment area. Multi-storey car parks will cater for longer parking periods and be located so that motorists may circulate on the one-way road system selecting the most convenient car park.

224. This is a centre capable of considerable expansion to a degree that is not possible in other centres in the area, and should the town grow substantially the centre could well become a big attraction in the larger area of Ayrshire in the entertainment, shopping, administrative and cultural senses, and could also stimulate the tourist trade.

225. It is recommended that this line of approach be further investigated by a team including structural engineers, services engineers and estate surveyors in addition to architects, planners, landscape architects and traffic engineers, so that a decision on the whole centre may be made which will lead to the design of the first phase.

Fig. 21

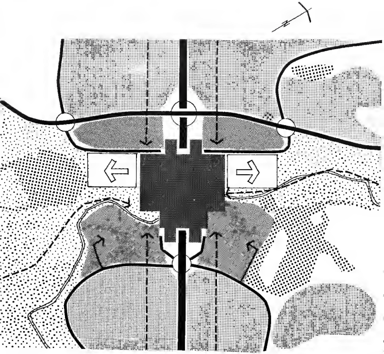


CENTRAL AREA

SITE CONDITIONS

Existing Development ▨
5' contours 60'
River Annick
Coal Mining Areas ☰
Woodlands ▩
Proposed Roads ■
Vehicular Access →
Pedestrian Access - - -
Listed Buildings ◆

Fig. 22



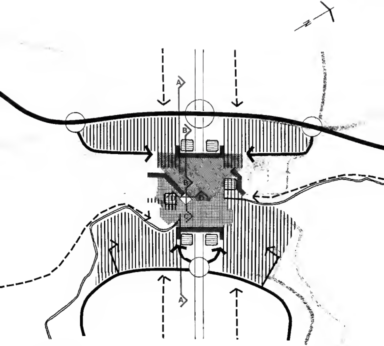
CENTRAL AREA AND TOWN PARK

Scale 0 500' 1000' 2000'

Town Centre ■
Central Area Housing ▨
Town Housing ▨
Woodlands ▨
River and Town Park ▨

Vehicular Access ▬
Pedestrian Access - - -
Growth of Town Centre ⇨

Fig. 23



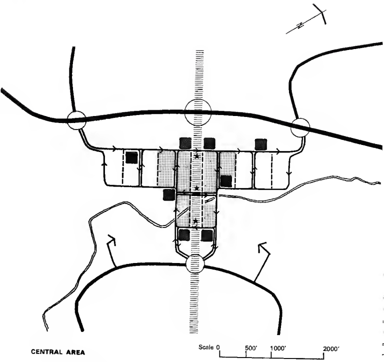
CENTRAL AREA

USE GROUPING PLAN

Scale 0 500′ 1000′ 2000′

Retail	▨
Offices	■
Civic/Entertainment	▦
Residential	||||||
Multi-storey car parks	☰
Town square	◇
Vehicular access	━━
Pedestrian access	– – –
River	═

Fig. 24

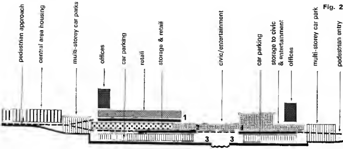


CENTRAL AREA

VEHICULAR CIRCULATION

Communications Spine	‖‖‖‖‖‖
Regional Road	▬
District Distributor Road	—
One-way Town Centre Road	—→—
Car Parks—long term	▬
short term	▨
Public Transport Halt	★
Service Vehicle Road	- — —
River	═

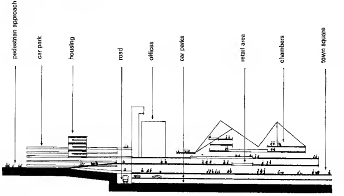
Fig. 2



SECTION AA across the valley

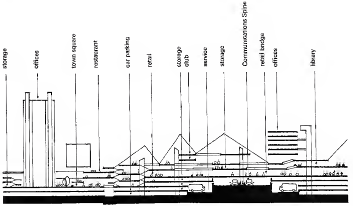
CENTRAL AREA

1 1. Main Retail Level
2 2. Town Square Level
3 3. River Bank & Car Parking Level
4 4. Civic/Entertainment Level

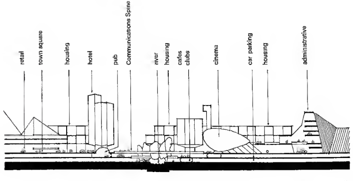


DETAIL SECTION BB

Fig. 26



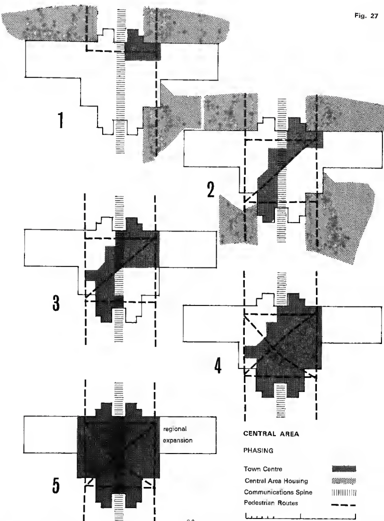
DETAIL SECTION DD through retail area and communications spine



DETAIL SECTION BC through Town Square and River Annick

CENTRAL AREA

Fig. 27



CENTRAL AREA

PHASING

9 Community Facilities

A. EDUCATION

226. It is understood from the Director of Education of Ayrshire that after the implementation of the present programme, schools in Irvine and Kilwinning will be at capacity. Thus new schools will be required for the new population.

227. For secondary education comprehensive schools will be provided, each with up to 1,500 pupils. These will require sites of 17 - 20 acres, including 10 acres for playing fields. However, the policy of the Education Authority allows the use of local authority playing fields when these adjoin a secondary school. In this connection consideration should be given to the possibility of dual use of school buildings and playing areas by outside bodies. Better value for money can be obtained with integration of facilities.

228. For primary education, one and two stream schools will be provided; these will require sites of 2¾ acres and 5 acres respectively. Nursery schools are not provided but primary school sites are increased by ½ acre to accommodate these at a later date.

229. A site of 8 acres (minimum) is also required for a Technical College. This should be located near to a public transport stop and preferably adjacent to public open space that could be used by the students for recreational purposes.

230. While the Education Authority agree to the use of secondary schools for extra-mural activities and youth service it is felt that youth centres should be linked with community centres.

231. Appendix 7 includes estimates of numbers of children in the various age groups during the first five years of the growth of the new town.

232. An increase in population of 55,000 could generate a demand for as many as 38 primary entry streams (say 15 two stream and 8 one stream schools, depending on location and size of population to be served) and 4 or 5 new secondary schools. If the additional population is increased to 75,000, 50 primary entry streams and 7 new secondary schools would be needed.

233. The number of schools required will depend upon the actual rate at which houses are built since the programme of development will vary the age structure for a given population.

234. The exact location of school sites can be worked out as the requirements of the Education Authority become more precise; in general, it is desirable that primary schools should be sited where it is possible to arrange direct access from the main town footpaths so that young children can walk to school in safety. Secondary school sites should be related to public transport stops.

235. The design of school buildings gives an opportunity for an important contribution to be made to the urban character of the town and it would be helpful if the buildings do not have to be sited behind lawns or hard areas protected by high fences but could be more directly related to the other buildings and spaces adjoining. Indeed, the boundaries of the school sites within the built up areas of the town should be integrated with the surrounding development. This is one of the advantages of a comprehensive approach to town design.

B. RELIGION

236. Discussions have taken place with representatives of the Church of Scotland and the Roman Catholic Church; their likely requirements are each assessed at three churches within the new development, associated with the district centres, and one church in the central area.

237. The Episcopal Church may also require a site.

238. Sites for all these Churches and any others required, including provision for halls, etc. can be suggested as detailed plans are prepared for particular areas of the town.

C. HEALTH

239. Discussions have taken place with the Scottish Development Department and it is understood that medical services buildings may be provided on the lines of the scheme operating at Cumbernauld. This will, of course, involve discussions with the various interests involved; allocation of sites can proceed when the matter has been decided in principle.

240. The Ayrshire Central Hospital will remain for the present although the allocation of accommodation may be changed when the new District General Hospital for North Ayrshire is built in 1968-1972 at Kilmarnock.

D. RECREATION

241. Recreational facilities should be planned comprehensively to ensure a suitable choice of indoor and outdoor leisure activities to meet the needs of people of all ages. Habits are changing, particularly in the use of open space and people are increasingly spending their leisure time in pursuits involving travel from their home town.

242. At present, there is little statistical evidence to show the trends in the demand for leisure time as opposed to other uses of time. Indeed, it seems

that the increase in leisure time, due to a fall in agreed working hours, is partly being taken up by an increase in overtime, indicating that extra money is valued more highly than extra leisure.

243. Irvine is reasonably well provided with recreational facilities including a football stadium, greyhound track, bowling alley, two cinemas and a dance hall together with premises for clubs and associations.

(i) Buildings

244. Sites will be required in the central area for a variety of social accommodation, the extent depending on commercial enterprise and initiative by local authorities and voluntary organisations. A cinema, a dance hall, a bowling alley, perhaps an ice skating rink are typical examples of private enterprise activity, and hotels will also provide social accommodation in varying degrees. A full scale community centre is likely to be required and this should be designed to be built in stages as the town grows, the first section being available with the first houses in that part of the town.

245. There will also be a need throughout the town, in addition to the halls to be provided with churches, for small halls and meeting rooms for local clubs and societies of all kinds. It is a feature of the social organisation of new towns that 'special interest groups' abound; in many cases they require only a room to meet in and this accommodation can be provided in conjunction with small halls holding perhaps 100 where they are situated near the central area, up to 200-250 in the more distant areas. Their primary object should be to provide for the less mobile groups - young wives, young children, the handicapped and the infirm.

246. The statutory and voluntary social services in the town will also require accommodation and some of this could be provided on the basis of joint use.

247. As in the planning of the whole town, the overall plan for social provision will involve close cooperation between the Development Corporation and many other bodies. This will be a continuing process and the plan must be flexible to allow for changes as the situation develops.

(ii) Open Space

248. Open space in the town will take various forms: playing fields, public and private, golf courses, parkland, walks, beaches and children's playgrounds. At the present time there are considerable areas of open space, including Towns Moor, Low Green and the Recreation Park in Irvine and the McGavin Park in Kilwinning. In addition there is the long stretch of beach from Irvine Harbour to Barassie. The four private golf courses in the area are used mainly by people from outside the area and there is one municipal golf course at Irvine.

249. Considerable thought has been given to the standards to be adopted for open space provision, particularly playing fields. From recent studies into the use of playing fields, it is suggested that 3 acres per 1,000 population should be allowed, although it must be appreciated that a fixed standard cannot be applied regardless of local conditions such as the age and socio-economic characteristics of the population, the type of sport played and regional traditions. The satisfaction of players and clubs is more likely to be achieved by good provision of changing accommodation and by grounds which are level, well drained and well maintained.

250. On this basis and making provision for some deficiencies in the existing towns, a total of between 200 and 250 acres of land will be required. For other open space, parks, playgrounds, etc. a provision of 4 acres per 1,000 population should be sufficient; this would give between 220 and 300 acres of land depending on the ultimate population.

251. The main open space is located between the linear development and the Irvine bypass road with additional areas along the river valleys and between the areas of development. A proposal is included for three new golf courses to the west of the central area and north of Dreghorn and for a regional park to include the sand and gravel workings, Shewalton Moor, the Ministry of Defence Land at Dundonald Camp and the radar station at Gailes; this is further described in Appendix 9.

252. Children's playgrounds will be located in relation to the housing areas. Children's play has a number of characteristics which must be taken into account:

i. Requirements vary with age and facilities should be separate and different

ii. Children gravitate towards centres of activity and playgrounds should be sited at these points

iii. Children tend to move about in waves from one centre of interest to another

iv. Children will not confine their play to the areas set aside for the purpose although if the playgrounds are sufficiently attractive, activity will be concentrated there

v. Children's play areas generate a considerable amount of noise

253. Bearing these points in mind it is recommended that a range of playgrounds should be provided which will satisfy the interests of children in three general classifications:

i. Toddlers: Spaces should be small, sheltered and plentiful and should be sited in positions which can be overlooked by a number of houses. They should be very simple with paved surfaces and of varied design. Noise will not be a significant problem

ii. Juniors: These spaces should be larger (about $\frac{1}{4}$ - $\frac{1}{2}$ acre) hard surfaced and should be provided with either play equipment, swings, roundabouts, etc. or designed as adventure playgrounds to encourage more imaginative activities. There should be space for the traditional street games, scribbling on walls, etc. These playgrounds will be noisy although normally it will not be reasonable to site them out of earshot of the houses because they should be distributed evenly throughout the district. However, much can be done to mitigate this problem by careful planning in relation to individual houses and by the provision of containing walls

iii. Teenagers: Some space will be required for vigorous spontaneous ball games which should be conveniently sited to deter use of the roads and service courts for this purpose. Each area will occupy about $\frac{2}{3}$ acre and will require a hard surface to stand up to intensity of use

254. The total provision of open space in the plan is 1, 520 acres including 165 acres of playing fields and 360 acres for three new golf courses. In addition the area of the regional park amounts to 2, 840 acres excluding the beaches.

E. ALLOTMENTS

255. The extent of the demand for allotments can only be gauged when the new population builds up. It will be possible to make sites available as required although careful attention should be paid to siting and layout of plots and the detail of storage buildings.

F. CEMETERY

256. There are two existing cemeteries in the area, at Irvine and Kilwinning and it should be possible to extend these, particularly the one at Irvine. An additional 15 acres should be adequate for at least the next forty years.

G. LICENSED PREMISES

257. A Licensed Premises Committee for Irvine will no doubt be set up by the Secretary of State and will be concerned with determining the number, nature and distribution of licenses - on, off and restaurant - within the new town.

258. As detailed planning proposals are prepared for areas of the town consideration will have to be given by the Corporation and the Licensed

Premises Committee to the size and type of licensed premises to be provided within a general framework to be determined.

259. Public houses form part of the community provision in the town and in design and location should reflect their function as social centres. They should be sited in relation to the town footpath system to encourage people to walk to the 'local'. Some car parking space will be required, however, and adequate road access for deliveries.

H. POLICE

260. The new town lies within the police districts of the Royal Burgh of Irvine and District, the Burgh of Kilwinning and District and the Dreghorn Area.

261. It is the opinion of the Chief Constable of Ayrshire that the proposed development will demand a new centrally situated combined Divisional and Sub-Divisional Headquarters and two new Sub-Divisional Stations serving the northern and southern sectors of the site.

262. The new Headquarters should be sited in the central area in close proximity to the Court and Municipal Offices and the Sub-Divisional stations in Kilwinning and the Dreghorn/Drybridge area. Approximately 100 staff houses will be required in the area.

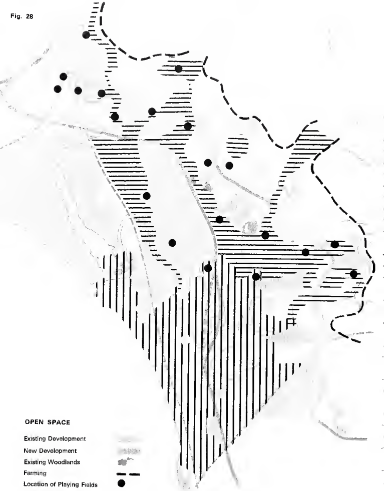
I. FIRE

263. The area is at present served by full time stations at Kilmarnock and Ardrossan and a part time station at Irvine.

264. In view of the fact that the new I. C. I. nylon plant at Ardeer requires class A fire cover approval has been given for a new fire station to be built adjacent to road A736 to the west of Kilwinning. This station will also serve the northern part of the new development.

265. A site will be required near to Drybridge for a second fire station to serve the southern half of the site.

Fig. 28


OPEN SPACE
Existing Development
New Development
Existing Woodlands
Farming
Location of Playing Fields
Town Open Space
Regional Open Space
Scale

10 Communications

266. The basic principles underlying the communications concept have been dealt with in Chapter 2, together with the application of the concept to the site. However, in describing the communication structure more fully it is desirable to expand on these principles.

PUBLIC TRANSPORT

267. Different towns can support different types, and perhaps more than one type, of public transport. A small town, or the first stage of a large town, may barely support a bus system sharing road space with private vehicles, while a large town may also efficiently support a separate system, perhaps rail. Thus in the plan recognition must be given to the possibility of change in the form of public transport as the population grows.

268. In order that public transport may economically provide a service comparable with private transport it must be capable of evolving its own hierarchy whereby different lengths of journey can be effected with minimum journey times. Thus, for example, a three tier system may evolve consisting of bus (stopping every 200 to 300 yards), rapid transit (stopping every $\frac{3}{4}$ to 1 mile) and British Rail (for inter-urban travel).

269. In new communities it is possible to arrange the development in such a way that everyone is within walking distance of what may eventually become the rapid transit line. This would result in a corridor of development of width approximately 600 yards on either side of the transport line.

270. In existing communities it is unlikely that an efficient rapid transit system could be devised so that each resident is within walking distance of it, and in these situations it is more likely that a local bus system would be required to feed the rapid transport system.

PRIVATE TRANSPORT

271. It is essential to keep the functions of the various roads in the communications system clear cut and to substitute for the multi purpose road a hierarchy of roads as follows:

i. Development roads to provide access to car parks, garages, service areas and buildings

ii. Distributor roads, at district and local level, forming the secondary town network, to take traffic from or to development roads and having no direct frontage access, although this ideal might not be realised for some time in the case of routes in existing built up areas.

iii. Primary roads forming the network of main roads for moving vehicles and connecting with the district distributor roads only at appropriately designed junctions and having no minor access points.

iv. Regional roads for inter-urban travel, connecting with the town primary roads at infrequent free-flow junctions.

272. An essential feature of the efficient use of the road hierarchy is that traffic should proceed from one type of road to another in orderly progression according to the stage of its journey.

THE PLAN FORM

273. The constraints within the area of study, the regional network of communications, and the pattern of existing settlements have determined the plan form as a belt of development about one mile wide and five miles long stretching in an arc from Drybridge in the south to Kilwinning in the north and flanking the eastern edge of the built-up area of Irvine Burgh. The existing industrial area at Drybridge and the settlements at Bankhead, Dreghorn and Kilwinning are all incorporated into the district pattern of the arc of development (See Chapter 2).

THE COMMUNICATIONS SPINE

274. The most important feature of the communication system is the spine running along the middle of the corridor of new development. The concept is of a road of expressway characteristics with controlled road junctions at approximately one mile intervals providing the "gear boxes" for vehicles to interchange either down the road hierarchy to the district distributors or up the hierarchy to the free-flowing flank roads.

275. The central reservation of the communications spine is proposed to be of dimensions suitable to carry a separate rapid transit system when this is required either on grounds of independent public transport economics or as a result of a policy decision in respect of restraint on private transport. It is not desirable that a decision should be made now as to the form which this rapid transit might take; this should be done in the knowledge of the technical developments and the economics of the alternatives at the time.

276. The road junctions on the communications spine are located at the peripheries of the various districts which it serves and the public transport stops are located at the centres of these districts.

277. For some years the spine will be a modest road in a wide reservation. However, it is desirable that the earthworks and planting relevant to

the completed spine should be carried out in the initial stages, so that expansion of the transport system can occur with a minimum of disturbance to the adjacent settlements.

278. The control of pedestrians will require continuous impenetrable physical barriers, generally on one side or the other, and particular arrangements will be needed at the public transit stops. These must be associated with a separated crossing for pedestrians, designed on a generous scale and integrated with the community buildings on either side. In its final form this might be an enclosed footbridge or underground arcade incorporating space for commercial and public use.

279. When the communications spine is complete the level of traffic noise may be expected to exceed 80d. B. A., measured at the kerb, for more than 10% of the time. The Wilson Committee suggested that the noise level inside habitable rooms should not exceed 50d. B. A. in busy urban areas for more than 10% of the time during the day and 35d. B. A. for the same period during the night. Studies have shown that, at a lateral displacement of 170 ft. from an unscreened motorway at ground level,the effective loudness is reduced only by one half. However, the introduction of dense screening such as walls, embankments or cuttings, and vegetation has a marked effect. It will be necessary, therefore, particularly in residential districts, to consider appropriate forms of screening as a part of the comprehensive design for the whole length of the spine. (Source: Traffic Noise, G.L.C. 1966).

280. In selecting a route for the communications spine the objective was to determine a line which suited the organisation of the residential and industrial districts which it would serve while having regard to engineering standards and ground form.

281. The route location was done on a base plan to a scale of 1/2,500 with contours at 5 ft. intervals and using geometric standards appropriate to a speed of 50 m. p. h.

282. Starting in the south the spine runs along the Dundonald to Drybridge road (B730), through Drybridge, to cross the Irvine to Kilmarnock road (A71) just west of Bankhead. Then it swings north-west crossing the Irvine to Glasgow road (A736) to the north of Girdle Toll and on towards Kilwinning skirting to the north of Deer Park and Ladyha' Park. It crosses the Irvine to Kilwinning road and the River Garnock in the southern part of Kilwinning at Dirrans Cottage, and then heads westwards along the disused railway line for a short length before crossing the main railway lines at Townhead on the west side of Kilwinning. It then swings north in the direction of Dalry to deal with further expansion.

WEST FLANK ROAD (KILWINNING/IRVINE BYPASS)

283. This is a trunk road diversion project to re-route the A78 coastal road to bypass the existing communities of Kilwinning and Irvine.

284. The bypass of Kilwinning is complete and provides dual two-lane carriageways from a roundabout at Hawkhill on the old A78 between Kilwinning and Stevenston, passing to the south of the Burgh, and rejoining the A78 at Dykehead between Kilwinning and Irvine.

285. The bypass of Irvine is now at the design stage, the line having been established by Order in 1964. It runs from the end of the Kilwinning section at Dykehead, round the north edge of Eglinton Vehicle Depot, and passing between the cemetery and the Burgh housing at Irvine Mains. It then runs south, crossing the Annick Water to the east of Lochwards and crossing the Irvine to Kilmarnock road (A71) about 300 yards west of Annickbank Cottage. It crosses the River Irvine to the west of South Warrix farm and rejoins the existing A78 at Newhouse Cottage.

286. The line of this road must be considered very carefully since the proposed new development in the area lies to the east of it and hence the road will create a physical barrier between the old and new settlements and between the new population and areas of open space extending to the sea between Irvine and Kilwinning.

287. Integration of the new development with Irvine and the open space will require segregated pedestrian crossings of the bypass, road connection to it, and special treatment of the adjacent ground where new development is likely to be close to it. Certainly it will be necessary to design it in relation to its setting in the new town and to the ground form with the subtle differences in level which are so important in the flat landscape. The design must, therefore, be considered comprehensively and in some breadth on either side of the road.

288. The road will be used for longer distance movements by traffic in the area and in due course, especially if further growth takes place, will require to be supplemented by the proposed new regional road on the east flank of the growth corridor.

EAST FLANK ROAD

289. Towards the end of the development period within the new town area the capacity of the communications spine, and of the west flank road, may be taken up by traffic generated by, and attracted to, activities in the new town. In this event it will be necessary to construct a regional road on the east flank of the town to accommodate through traffic and to increase the number of access points to the new town. The need for this road will be increased if the growth corridor is extended.

290. The location of this route has been selected with the objective of keeping it close to the eastern flank of the new development in order to accentuate the definition of the edge of the built-up area and at the same time to provide a physical barrier between it and the agricultural land beyond.

291. From south to north, the suggested route starts from Troon to Kilmarnock Road (A759) at Gatehead, passes to the East of Bankhead and crosses the Irvine to Stewarton road (B789) at Perceton Mains. Proceeding north-west it crosses the Irvine to Glasgow road (A736) at Auchenwinsey Plantation and the Lugton Water at Broomhill, swings northwards and crosses the railway in the direction of the Dalry valley to the east of, and parallel to, the communications spine, should this be required due to expansion of the developed area.

CROSS CONNECTIONS

292. The west flank road (Irvine/Kilwinning hypass), the communications spine, and the eventual east flank road, run roughly in parallel from south-east to north-west and cross connections between all three are proposed at three locations.

293. the most southerly of these is from the A78 west flank road at Shewalton Moor, passing to the south of Drybridge where it crosses the spine, and then connecting to the east flank regional road to the south-west of Crosshouse.

294. The north cross link runs north from the start of the Kilwinning by-pass at Hawkhill, to connect with the proposed bypass of Stevenston near Hill-head Farm; from there it runs north-east to join the existing Kilwinning to Dalry road (A737) at Smithstone, before turning east to connect with the spine just west of Woodgreen Bridge. When the east flank road is built, the cross link would extend eastwards across the railway to join it in the vicinity of Goldcraig Farm.

295. These two cross links would, of course, define the longitudinal limits of the communications spine and the future east flank road until a sufficient extension of development is created either north or south to warrant their longitudinal extension to a further cross link.

296. Intermediate between the north and south cross links already described a third link is proposed near Girdle Toll and passing to the north-west of the central area. It runs from the line of the existing Glasgow Road (A736) as far as Clark Drive, then swings east and connects with the Irvine hypass between Newmoor and Stanecastle. At Fencedyke it turns north-east, by-passes Girdle Toll and connects to the communications spine before proceeding to Holehouse where it connects with the eventual east flank road. From

here it swings north to cross the railway on the line of the existing secondary road and past West Balgray to connect with the existing A736 moorland road from Irvine to Glasgow.

297. In addition to these three connections between the spine and the two flank roads, a further connection from the spine to each flank road is proposed to syphon off, at fairly frequent intervals, traffic which is making journeys out of the new town.

298. Thus the existing direct road between the centres of the Burghs of Kilwinning and Irvine connects both these communities to the west flank road (Kilwinning/Irvine bypass) at Dykehead and to the communications spine in Kilwinning at Dirrans Cottage and the spine is also connected to the eventual east flank road by a link road at Springside.

DISTRICT ROADS

299. Within the framework of the regional and primary road network already described existing and new areas of development have been organised as a series of districts served by their own distributor roads and development roads.

300. The organisation of internal roads in the existing Burghs of Irvine and Kilwinning and in the new central area, is dealt with in the Chapters on these particular areas.

301. In the areas for new residential and industrial development the proposed arrangement of districts and district distributor roads is shown on the Basic Plan (fig. 6, page 18). Generally they enclose the activities of the district so that vehicular movement is outwards towards the periphery and round the edge of the district to join the communications spine at the road junctions situated between the districts. Pedestrian movement, on the other hand, is focussed towards the public transport halt in the middle of each district.

302. The location of the district distributors has had regard to factors such as district size, distance from the spine, ground form, and engineering standards. They have been worked out on a scale of 1/2,500 using a contour base of 5 ft. intervals.

LOCAL ROADS

303. It is not desirable at this stage to attempt to plan the road system within the new development districts. This will, however, require careful treatment because it is within the districts that the conflicting requirements of pedestrians, moving vehicles, and stationary vehicles focus together.

304. It is important, therefore, to state clearly the principles to be pursued in arranging the internal communications structure while accepting that

the application of these principles will vary from district to district as landscape, land-use content, and other factors are introduced.

305. Each district should consist of a combination of localities or clusters of buildings each having a primary function which might be residential, industrial, commercial, educational or recreational. Within these localities the degree of vehicular accessibility should be considered against standards of safety, amenity and freedom from noise and nuisance.

306. An essential characteristic of a locality, as of a district, should be that no vehicles are attracted into it which do not have a purpose within it.

307. Within each locality pedestrian activity should be considered in three categories:

(i) Trips between the locality and major attractors outside it, such as schools, shops, and public transport
(ii) Random trips within the locality such as children at play and visits between buildings
(iii) Vehicle generated trips as in the cases of people going to and from cars, loading and off-loading from delivery and service vehicles, and activity associated with travelling shops.

Of these three categories of pedestrian activity complete segregation should be considered for group one (trips out of the locality) and the design should recognise the inevitable mixture between vehicles and the pedestrian activities of groups two and three.

308. As in a district the organisation of each locality should aim to provide maximum convenience for both vehicles and pedestrians and in this respect it is important that pedestrian trips out of the locality should be directed away from the more heavily trafficked roads. This is best achieved by making the vehicles move into and out of the locality in a direction away from the major pedestrian attractions while the footpaths lead directly towards them.

309. In order to minimise the nuisance and danger arising from pedestrian/vehicle conflict, the size of each locality should be controlled so that no inevitable pedestrian/vehicle conflict is present on roads carrying peak traffic volumes in excess of 300 cars per hour.

310. The layout of roads within the localities should effectively control the speed of vehicles and should incorporate adequate standards in respect of intervisibility between moving vehicles, and between moving vehicles and pedestrians, separate facilities for standing vehicles and provision for manoeuvring, turning and garaging. Suggested standards for these are given in Appendix 8.

311. It is fundamental to recognise that the roads in each district and locality, and their dimensions, are a function only of the content of that particular district or locality. There are thus no implications on these roads which would arise from expansion of the whole corridor of development.

TRAFFIC PREDICTION

312. The road pattern described in this chapter has been tested for alternative population and employment levels utilising a computer programme. The results of this study together with information on road widths and the form of junctions is included in Appendix 8.

11 Landscape

BACKGROUND

313. Whether at regional or local level all landscape can be broken down into areas of differing character which arise out of variations of topography, climate and vegetation. Within these areas are to be found barriers, both physical and visual, the more prominent forming natural boundaries to localities which are visually self-contained and enjoy their own microclimate and local characteristics.

314. Man's primitive need for a sense of identity with his surroundings and for shelter has led, from the earliest times, to his instinctive appreciation of the landscape and its limitations which has resulted in a natural integration between the dwelling and its surroundings.

315. The basic natural planning disciplines have all too often been overlooked in town development particularly with the unquestioning acceptance of building and planning rules and regulations instead of the study of performance standards. Improved building techniques to meet the demands for greater output of housing and other accommodation have also had an important and often unfortunate effect on the environment. In far too many instances new development has been imposed upon the landscape rather than the overall design being related to the site characteristics; an unprecedented rate of house building and town development has been achieved but rarely with a result which embodies that sense of rightness, permanence and pleasantness which is associated with earlier settlements.

316. The relationship between the disciplines of the natural landscape and the pattern of land use at Irvine is, therefore, of great importance if an adequate basis for the town's structure and environment is to be established.

THE AREA

317. The main landscape features of the area are described in Appendix 1. The more detailed considerations of landscape development in the existing towns of Irvine and Kilwinning are described in Chapters 3 and 4 and the regional recreation study in Appendix 9 explains in some detail the landscape potential of the raised beaches in the Shewalton Moss area.

318. This chapter is, therefore, specifically related to the area over which the linear development will take place.

319. The topography of this foothill landscape has been studied in considerable detail and related to existing vegetation and climatic influences in the area.

VEGETATION

320. There is a fair proportion of scrub and shrubby growth present in the hedgerows and over areas of derelict ground. Whereas this tends to predominate over the character of the present rural scene, it is of too rough a nature and at too small a scale to be regarded as an important feature for preservation within the proposed development. Little substantial woodland remains and what does exist is neglected, fragmented, and unrelated to the land form. The area is, however, capable of carrying reasonably good timber and it is this potential which is significant at Irvine where shelter and visual containment are important requirements of the plan.

CLIMATE

321. Strong winds are a feature of the Ayrshire Coast and present the most important climatic influence. Cold easterly winds occur in the Spring months but it is the south westerly winds which predominate over the greater part of the year and, although this area lies at some distance from the sea, the effect of salt spray in the stronger winds cannot be discounted. The land form itself, provides a measure of shelter to winds rising from the east but the ground is very exposed to the prevailing winds on the shelves and on the western flanks.

TOPOGRAPHY

322. The general approach to the analysis of the land form is outlined in Chapter 2. Most of the land is at gradients flatter than 1:15 and where sharper gradients are found they are either associated with the flanks of the flat-bottomed river valleys or occur as folds, or bands, of ground generally inclining in a westerly direction.

323. The topography itself presents little in the way of restrictions to building development except where the more particular requirements of industry, schools and recreation are concerned.

324. On the other hand, a clear pattern of basic localities arises out of the study of the natural disciplines. The separation of the shelves of land by west facing slopes coupled with the need for shelter from the south west and from the east suggests a framework of tree planting on the slopes which, by its very nature, will contribute in no small measure to the identity of the shelf areas. Moreover the same landscape elements which give rise to the areas of containment, or localities, also help to define the corridors for vehicular and pedestrian circulation.

325. This consistent approach to the whole area will lead not only to a

general integration of the total development with the underlying landscape character but will allow for great variety and design flexibility in the detailed treatment of the localities.

326. In broad outline the definition of containment areas is generally clear and have proved a strong influence in the development of the plan structure. In greater detail, however, the interplay of factors and influences becomes very subtle and will call for a considerable measure of discipline in design and organisation if the plan structure, and the environmental potential that it offers, is to be fully exploited.

DESIGN FACTORS

327. Landscape design is the process of adapting the natural environment to suit the needs of people. There are five main factors which control this design process:

- i. Natural factors such as ground form, climate and vegetation which must be exploited to satisfy the basic human requirements of identity and comfort
- ii. Artificial factors such as noise, smells, activities, textures, proportions and scale which must be manipulated to add strength to the natural framework and to express the purpose of the development
- iii. Speed of movement along pedestrian and vehicular routes which will influence the juxtaposition of the design features
- iv. The application of non-natural units such as paving slabs, fences, walls, hybridised plants, artificial lighting and other street furniture as an expression of the more sophisticated requirements of people
- v. Time - trees, shrubs and other plants grow at varying rates and mature and die over different periods. The design objective, therefore, must be capable of rapid achievement coupled with long term effectiveness.

DESIGN STAGES

328. The design process, to be fully effective should, therefore, be ' broken down into stages as follows:

- i. Analysis of topography, climate and vegetation to broadly define areas of landscape containment (6" scale derived from 1/2500 scale study)
- ii. Consideration of general requirements of particular land uses such as industry, education, recreation, housing and communications, in the context of the first stage analysis, to form a framework for town structure (6" scale derived from 1/2500 scale study)
- iii. Detailed analysis of topography, microclimate, vegetation, views, soil structure and drainage at the scale of the localities, to establish

the general disposition of the component parts of the development (1/2500 scale derived from 1/500 scale study)

iv. Layout studies of main massing and circulation system within each locality including buildings, ground form and moulding, vegetation masses, roads, footpaths and spaces - to test density possibilities in environmental terms and to establish the final layout form (1/500 scale)

v. Detailed treatment - the final exploitation of natural features, relating the detail of development to the immediate ground form - building and path levels, fences, walls, planting etc. (1/500 + 1/16" scales)

329. The contribution of landscape design lies as much in a proper appreciation of natural influences in the preliminary planning stages as in the final expression of the plan on the ground. Furthermore, an open space layout derived from fundamental considerations is more easily managed and maintained than one which has relied upon a mainly decorative approach to design (fig. 29, page 107).

330. Each type of development throws up its own particular aspects of landscape design and the most important of these are listed below:

i. Housing

331. Most of this development will take place on land which has a thin top soil cover over boulder clays. In its present undisturbed state this condition has given rise to good healthy pastureland Once disturbed, however, its poor drainage qualities become very difficult and special measures have to be taken to render it suitable for gardening purposes Careful consideration should be given, therefore, to the provision of houses with gardens and to garden sizes. At the local scale garden development can be a significant feature in the environment and it is imperative that where gardens are provided the plot sizes and condition should be such that there is every chance that they will add to, rather than detract from, the scene.

332. The details of paths, fences, walls, soft ground, planting and furniture cannot be divorced one from the other, and it is most important that a proper relationship be achieved between building slab, path and road levels; that cross-falls, vertical/horizontal curves and footpath lines should be correlated, and that proper attention is given to the edges and junctions of materials.

333. Too much emphasis is often placed in housing work on planting, and the selection of plants, for its own sake. The arrangement of planting should be an integral part of the three dimensional concept and the selection of species should arise out of function and ecological considerations rather than from a decorative whim.

ii. Industry

334. Industrial development often produces interesting large scale building shapes very expressive of the character of the land use. At the same time it creates a ground level clutter which can be very unsightly. Landscape techniques of ground moulding and screen and background planting, if planned with the initial layout, can result in industrial development which is a powerful contribution to the overall shape, character and environment of the town.

335. Recreation areas and outdoor facilities for sitting out during work breaks are other essential elements of industrial site layout.

iii. Communications

336. The effect of roads on the landscape warrants considerable study. Reaction to road environment varies according to the speed and purpose of the traveller. Degrees of enclosure and openness in the view from the vehicle, the close integration or isolation of buildings with or from the road scene, and the detailed treatment of the road space and intersections create a formidable list of design disciplines. Nor must it be forgotten that roads are only a part of the overall development and that in themselves they create spaces which have to be woven into the total environment of the town.

337. The scale of the major road pattern will present problems and it will not be possible for the building forms to dominate it. Every care must be taken to integrate the lines and levels of the roads with the topography of the site so as to cause the minimum visual harm. In connection with the communications spine it is important that steps should be taken to minimise the effects of noise. This may involve the introduction of screens such as walls, earth moulding and planting, particularly in residential areas. Care must be taken that such measures are part of a comprehensive design for the whole length of the route which is integrated with the development of the landscape. For many years the spine will consist of a modest road in a wide reservation and it is very desirable that the earthworks and planting should be carried out in the initial stages.

iv. Recreation and Open Space

338. In the definition of containment areas which arose from the survey analysis an outstanding feature was the form of the river valleys which cut across the site. These valleys radiate from Irvine, cross the linear development at right angles, and are roughly equidistant from each other. This distinct pattern offers a framework for an open space system which is eminently suited to the development of local recreational facilities and to collecting and directing the major pedestrian movements of the built up areas along vehicle free corridors. Fig. 28, page 90 illustrates the system and relates it to the proposed regional park and also to the areas around Eglinton Castle

and Irvine Moor, which will serve the more local recreational requirements of the new town.

339. It can be seen from this plan that no part of the development will lie at a distance greater than $\frac{1}{2}$ mile from major open space. Local requirements such as kick-about pitches, children's playgrounds and sitting-out spaces can readily be incorporated into the more detailed layouts of the localities themselves and the spaces between them.

340. Three further areas of open space are shown on the plan. These do not relate to the general system except insofar as they are located in positions which are rather more isolated from the major open space system. They occur where outlying ridges have penetrated the broad band of shelf land upon which the linear development has been sited and as a result they are steep sided and, therefore, not suitable for development. At the same time they command, from the upper levels, fine views towards the sea. Because of this it has been found appropriate to suggest that these should become rough common land, rather similar in character to Corsehill Mount which will supplement the general open space facilities of the area.

v. Forestry

341. Whereas it is very unlikely that more detailed design considerations will lead to total afforestation of the land areas between the localities, plantations developed on sylvicultural lines will undoubtedly have a prominent part to play in the development. In the normal course of such operations it is to be expected that they will produce a saleable crop of thinnings from time to time. Thus some measure of financial return can be expected from this landscape feature. Forestry Commission grants are available for certain classes of the work but it must be borne in mind that these carry restrictions on the minimum dimensions of plantations and obligations with regard to maintenance and disposal of the crop.

EXECUTION and MANAGEMENT

342. Programming of design and site work, adequate maintenance and suitable administrative and financial techniques are all essential if landscape development in the new town is to be effective.

343. It is important that as much as possible of the landscape work should be completed before the new residents move into the houses so that a suitable atmosphere and local character can be created which will catch the imagination of people who may be unused to the type of environment which will be established. This is easier to say than to do. Considerable difficulties and frustrations arise at the completions stage of this type of development when contractors and the public services are all making claims to ground space. It is desirable, therefore, that as much of the external works as possible should be included in a single contract.

344. It will also be beneficial to consider some of the aspects of site ganisation. We would suggest that soil stripping should be carried out under careful landscape control; very often a poor strip brings about an admixture of sub-soil with top soil which lowers the quality of subsequent growth and incurs considerable expense in remedial works. In this connection too it will be useful to prepare a preparatory works programme for tipping, ground moulding and protective fencing in order to avoid double handling at a later date and the deterioration of vegetable soil in temporary dumps.

345. A great deal of landscape construction is normally included in engineering and building contracts; earth-works, pavings, walls and fences can all be dealt with in this way. But in detail work, including planting, consideration will have to be given to the relative advantages of employing contractors or establishing a direct labour staff within the organisation of the Development Corporation. Many new towns have found it necessary to set up a nursery and to use their own labour for planting out; by such methods direct contracting can be augmented by a local service available to deal with problems for which it is best suited. It must be realised, however, that skilled horticultural labour is very difficult to find and the direct organisation of site workers can be a time-consuming burden on the qualified landscape staff.

346. Another difficulty which can be foreseen is the supply of plants. This scheme will require a very considerable amount and a constant supply of nursery stock which will inevitably include large numbers of single species. Although this can be overcome to some extent by the establishment of a nursery for propagation and growing on, staffing and administrative problems are caused, particularly if the site work is contracted out to a commercial firm. The British horticultural trade is not organised for this kind of supply and orders will have to be placed well in advance if plant material is to be assured. This means that acceleration of certain sections of the design programme will be essential if the work on site is to be concluded satisfactorily.

FINANCE and MAINTENANCE

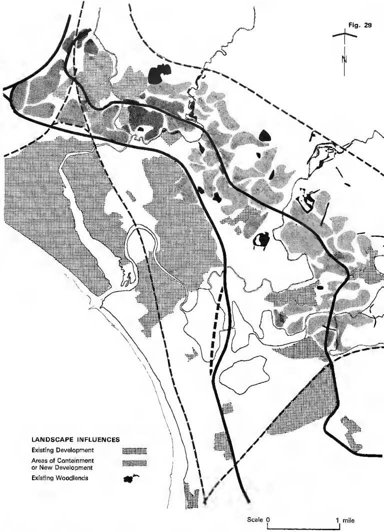
347. Soiling, seeding and planting is a relatively cheap operation but the costs involved can be greatly increased where soil is mishandled and where supervision of building and engineering work is not sufficiently extended over those areas which are eventually to be planted.

348. Vandalism is to be expected and can be most expensive; it can be considerably reduced, however, if landscaping is completed before hand-over dates. It is absolutely essential to have a high standard of maintenance particularly in the first few years after completion; nothing breeds the destructive element more than neglect.

349. Experience in the other new towns shows that landscaping requires maintenance techniques which are entirely different from those used in most existing towns and the annual cost can be considerable. Modern landscape design techniques aim at reducing the necessity for intensive maintenance over the years but capital costs can be increased above normal and they will almost certainly result in a fairly heavy expenditure on maintenance during the early years of growth. This is important as a well designed layout can quickly be ruined by inadequate after care.

350. The current practice, in the new towns, of allocating money for landscape work on a capital cost per unit of development is totally unrelated to the needs and objects of this type of work in that site factors which condition landscape costs can vary so much. It tends to encourage heavy expenditure on layouts which do not require it and to curb the design possibilities on those which do. If the necessary flexibility in design and maintenance is to be achieved it is essential that a sounder basis for the financing of landscape work should be introduced.

Fig. 29


N
LANDSCAPE INFLUENCES
Existing Development
Areas of Containment or New Development
Existing Woodlands
Scale 0
1 mile

12 Utilities

(A) GAS

351. The gas supply, which will ultimately be non-toxic, will be supplied from Kilmarnock in the first instance, a high pressure main has recently been laid from Kilmarnock to Springside and, together with storage at Irvine and Kilwinning, this should be adequate for the first two or three years of development. Ultimately, the Scottish Gas Board will require a site of about four acres for storage purposes, preferably south east of Irvine adjacent to an industrial site. The gasholders should be of the high pressure type and of good design and care should be taken over the detailed siting.

352. There will be no difficulty in providing adequate gas supplies for the new town.

(B) ELECTRICITY

353. The supply, to be provided by the South of Scotland Electricity Board, will be taken from the main grid line. A new 132 kV sub station will be required near to the central area together with sites for a number of 33 kV sub stations as well as local sub stations distributed throughout the area.

354. It is essential that all cables should be placed underground within the built up areas and the surrounding areas of open space.

(C) WATER

355. The proposed Loch Bradan scheme will ultimately provide the water supply for the new town. This scheme will take some time to construct and as an interim measure to provide for the immediate industrial needs, Ayr County Council have obtained authority to extract 5 million gallons per day from the River Doon at Dalrymple.

356. Because of the recent decision by I. C. I. to build a new nylon polymer factory on their Ardeer site the quantity of water required will need to be increased. The County Council are at present seeking powers to increase the daily extraction from Loch Doon to 10 million gallons and, in anticipation of authority being given, are extending the recently constructed pipeline from Dalrymple to Drybridge across the new town area to the Ardeer site. This pipeline will ultimately be connected to the Loch Bradan scheme which will

increase the water available in Central Ayrshire as a whole by some 20 million gallons per day. Meanwhile, pending the completion of the Loch Bradan scheme part of the 10 million gallons will be available for the initial developments in the new town.

(D) DRAINAGE

357. The existing foul drainage systems in the area are used to capacity and in urgent need of repair or replacement. A new compreheneive sewerage and sewage purification scheme will be required for the new development and an Area Drainage Technical Committee has been set up by the Scottish Development Department to investigate the possibility of group action in this respect. It is imperative to the new town that an early decision should be reached and that work should be commenced on preparation and implementation of a drainage scheme without delay.

358. Surface water will drain into the rivers but care must be taken to prevent pollution by domestic and industrial effluents. Some of the existing water courses are subject to flooding at peak rainfall periods and, therefore, a thorough investigation must be made into the discharge of surface water.

(E) G. P. O.

359. Sites will be required in the central area for a new telephone exchange and also a main post office in due course.

360. It is essential that underground telephone mains should be provided throughout the town.

(F) TELEVISION AERIALS

361. A profusion of television aerials can do much to mar the appearance of a town and a wired distribution system, with underground mains, should be installed as the new development proceeds.

(G) ATMOSPHERIC POLLUTION

362. The new town has the great advantage of clean air and measures should be taken to ensure that all new development in the area incorporates appropriate heating systems and that industrial processes do not result in the emission of smoke or noxious fumes. Chemical industries pose particular problems which are at present being investigated.

13 Summary of Land Use

363. The total land use provision in the plan is as follows:

Housing	2, 100 acres
Education	260 "
Central area	220 "
Industry	720 "
Roads	680 "
Open spaces (excluding golf courses and regional park)	1, 160 "
Golf courses	360 "
Regional Park	2, 840 "
Cemetery	25 "
Existing development	2, 560 "
Unallocated	1, 515 "
Total	12, 440 "

14 Programme of Implementation

364. The programme of development is an integral part of any town plan; it is particularly important in the case of a new town in which a balanced growth has to be achieved within a few years instead of the centuries over which older towns have matured. The planning concept adopted for Irvine must result in even greater emphasis being placed on this section of the Corporation's work.

365. In the building of a town the following points should be kept in mind:

i. The various parts of the main road system must be available well in advance of development to ensure adequate facilities for movement about the town

ii. Every attempt should be made to complete lengths of the town main road system passing between residential areas to avoid subsequent disturbances to the environment by the carrying out of major road works

iii. The footpath network should be sufficiently complete at each stage to enable people to walk to the centre and to the community facilities in other parts of the town; this may involve the construction of temporary lengths of path and these should have a good surface and adequate lighting. It is most important that from the beginning people should become accustomed to using a separate footpath system

iv. At all stages the necessary secondary and primary schools, local shops, play spaces, meeting rooms, churches and other communal facilities should be provided together with the public utility services.

366. The programme can be divided very roughly into four five year phases and the order of work on this basis is set out below. It must be stressed, however, that the figures and items of work should be treated with considerable reserve since a realistic programme must depend on further investigation by the Development Corporation into the availability of resources and technical manpower, land, finance and the building and civil engineering industries. There will also be negotiations with other authorities and in particular decisions on the main services of which drainage and water are the most crucial. The

phasing does, however, indicate the general order of development proposed and stresses the importance of commencing the linear development at the central area so that the town will grow to the north and south simultaneously (fig. 30, page 114 fig. 31, page 115).

PHASE 1 - 1967-1972

367. The additional population in the new town at the end of this phase should be of the order of 10,000.

368. During this period building should take place on some of the peripheral sites at Irvine and Kilwinning together with some redevelopment and road and environmental improvement in the two towns.

369. Servicing should commence in the Girdle Toll town centre area in order that building can start on the linear development. In particular a new drainage system and sewage purification works will be required.

370. Sand and gravel extraction should continue to an agreed programme. Major tree planting should commence in selected areas throughout the town with particular attention being given to shelterbelts in the regional park area including, if possible, some of the Ministry of Defence land at Dundonald Camp. The Irvine bypass should be completed.

PHASE 2 - 1972-1977

371. The additional population at the end of this phase should be about 30,000 to 35,000.

372. Building work should commence on the centre section of the linear development on either side of the town centre. The first phase of the town centre should be completed during this period.

373. One carriageway of the communications spine should be constructed for the complete length of the linear development to enable the establishment of a public transport route through the new town to Kilwinning.

374. Minor lakes should be created by the sand and gravel excavations.

PHASE 3 - 1977-1982

375. The additional population at the end of this phase should be about 45,000 to 50,000.

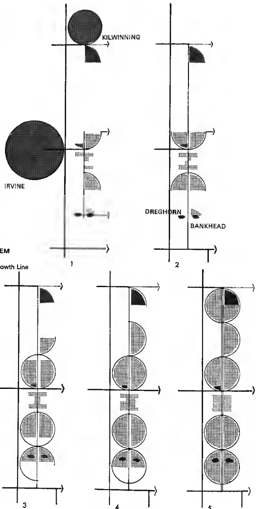
376. Building should continue north and south of the town centre, the communications spine should be expanded to deal with the increasing volumes of traffic and attention should be given to improving the connections to the regional road system.

PHASE 4 – 1982 and AFTER

377. The additional population during this phase will rise to 55,000 people with possible additional expansion.

378. Town building will continue more slowly to provide additional housing and various facilities to meet the needs of the population and particular attention should be given to work on the regional park and major open space. During this period work may also commence on further expansion of the new town and if necessary on the provision of additional sections of the major road network.

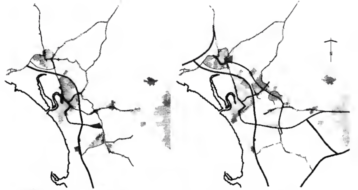
Fig. 30



GROWTH SYSTEM

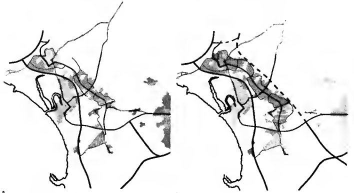
Development of Growth Line

Fig. 31



1 Expansion of Existing Communities

2 Commencement of the Growth Line



PROGRAMME MAPS

Existing Development ▨
New Development ▨

15 Town Character

379. All the elements of a town plan, the land use pattern, traffic routes, social studies, population and employment structure and planning standards are but the means to achieve the desirable end - the total environment. The town should have a physical meaning for the people who live and work there.

380. Town character is elusive but vitally important, particularly so in a new town. Whether it can be obtained will depend on many factors especially on the physical form of the town and its landscape. There is a need to create a place with individuality and not just another area of buildings and roads. Irvine should have a regional significance in design and a coherent structure. In particular great care should be taken in the design of the spaces around and between buildings. The hard landscape of paving, streets and squares and the soft landscape of the gardens, the parks and open space, the riverside walks and the larger landscape and seascape around the town will require integration to lead to a unified image of the whole town.

381. There are two visual aspects of town character that have to be considered; the views that are obtained when moving about inside the town and the prospects from without.

382. Within the town there will be a great variety of local views with the development related to the land form and the various areas of containment. At some points there will be views out of the site to the surrounding moorlands, and on occasions there will be magnificent views of the skyline of the Isle of Arran, sometimes snow capped and at other times with the soft purple and green hues seen in the sunshine. The buildings and the spaces between them will present an ever changing picture as one moves about the town within the clusters of houses, within the districts and along the footpaths from house to district centre or to the town centre. There will be the contrast between the compact urban clusters and the surrounding areas of open space varying from smooth playing fields to rough parkland, golf courses and wooded areas and within a short walking distance the beaches and the open sea which will give Irvine a character unique among all the new towns in this country.

383. From outside the town and from some of the open areas within, the image of Irvine will be characterised by the towers and spires of the old town

and the higher buildings in the town centre. But in spite of the general flatness of the site there will be views looking down on to the new linear development from the small hills such as Corsehill Mount and Belvidere Hill which give such a commanding view of the new town site. From these vantage points it will be possible to see a number of the clusters of houses and other buildings, with the roofs dominating, and in contrast with the close masses of building will be the open areas mainly planted with trees or following the lines of the meandering rivers.

384. There should be a restricted range of materials in the town with particular attention paid to the design of roofs. Buildings should be designed to withstand the climatic conditions and should be simple and well proportioned with maximum reliance placed on honest design and less on gimmickry and paint.

385. The scale of the major road pattern will present problems and it will not be possible for the building forms to dominate it. Every care must be taken to integrate the lines and levels of the roads with the topography of the site so as to cause the minimum visual harm. If the implications of the use of the motor vehicle are accepted, the town, as a good place in which to live, must not be submerged in the process.

386. The landscape or townscape in the town must receive special care, not as something added to a building layout but as an integral part of the total design. It is not just a matter of planting but of the comprehensive approach to the relationship of surfaces and elements - pavings and steps, walls and fences, garages and transformer stations, car parks and playgrounds, street lighting, telephone boxes, seats, all the impedimenti of town life.

387. Town design is a continuing process and it is vital that the Development Corporation should co-ordinate the work of the many developers and their architects on the basis of fully worked out briefs which provide a coherent framework without stifling reasonable aspirations. This will involve the preparation of detailed studies, providing policy statements in graphic form, to guide the development of the town. In the case of an individual building the general location should first be fixed and then the architects concerned should prepare preliminary designs on the basis of the brief; only when these have been satisfactorily worked out in relation to other buildings and spaces in the area to achieve an integrated solution should the precise site boundaries be determined. The building of a new town provides opportunities which cannot often be realised in existing towns, to achieve a comprehensive approach to the use of land and this should be reflected in a three dimensional concept governing the disposition and design of buildings and spaces.

388. Irvine can achieve a unified structure and a character arising from its site which can mark it out as a worthy example of the enterprise of the second half of the Twentieth Century. The opportunity and the challenge should inspire all those who at one time or another will participate in the building of the new Irvine.

APPENDIX 1

Survey

1.1 The Designated Area of 12,440 acres is situated in Ayrshire, on the west coast of the Firth of Clyde opposite the Isle of Arran. The Burgh of Irvine had a population in 1961 of 16,911 and the Burgh of Kilwinning a population of 7,289. Along the coast to the north are Stevenston (population 10,164) 5½ miles from Irvine, Saltcoats (population 14,182) 6½ miles and Ardrossan (population 9,573) 8 miles and to the south are Troon (population 9,927) 7 miles from Irvine, Prestwick (population 12,562) 9½ miles and Ayr (population 45,276) 12 miles. Inland is Kilmarnock (population 47,509) 8 miles to the east. Glasgow is 25 miles to the north east (fig. 32, page 129).

(A) LAND FORM

1.2 The land forms part of the geographic regions known as the Central Coast, Garnock Valley, The Cunninghame and Kyle Lowlands (fig. 34, page 132). Within a bowl of land formed between the hills behind Ardrossan in the north and Dundonald in the south, the coastal landscape can be divided into three sections; the seaboard landscape of beach and sand dunes, the bowl landscape, conditioned by its nearness to the sea but not visually affected by the sea, and the foothill landscape, generally remaining in use for agriculture. It is important that the plan should reflect the opportunity of exploiting the possibilities of these three forms of landscape.

1.3 The seaboard landscape retains a complete and separate character, with marram grass and dunes. It extends inland north west of Irvine to include the Ardeer peninsula and this strip of land contains the estuary of the River Garnock and River Irvine which meander in wide sweeps to join at the small harbour of Irvine and flow into Irvine Bay. Inland the rivers flow across the bowl of land in steep-sided cuttings. Here the land, generally flat with minor undulation, is mainly built upon or subject to intensive mineral exploitation. Where it is not used in these ways it contains small fragmented farm units. The foothill landscape is characterised by change in the structure and use of the land. This is the area of countryside with well maintained farms, estates and woodlands, present day evidence of the position which Ayrshire gained during the last century in agriculture. Further inland the terrain becomes very bleak.

1.4 Land fertility in the area varies between A class land east and south east of Irvine, B class land to the north east and B minus land east of Kilwinning (fig. 37, page 135).

(B) GEOLOGY

1.5 Like most of the area south of the Renfrew Heights the Irvine area is composed of drift deposits of some thickness. The seaboard sector, consisting of marine deposits from old coastlines, mainly sands and gravels, is separated from a more rolling area of glacial boulder clay by a gravelly ridge extending from Kilwinning to Dreghorn. Riverside areas comprise continuous strips of flat alluvium which broaden into extensive areas beyond the dune belt. These various superficial deposits completely cover the underlying solid strata of the Coal Measures except for some very occasional volcanic intrusions. The nearest outcrop of solid rock is that of the whinstone Dundonald Hills which form the southern edge of the area (fig. 36, page 134).

1.6 A bore survey of the area should be carried out and it will be necessary to undertake detailed surveys before sites are developed.

(C) MINERALS

1.7 Three economically valuable minerals are present or have been worked in the area; coal, fireclay and sand and gravel.

1.8 The area lies wholly over the Productive Lower Coal Measures, the seams having been largely worked out following an active build up of activity from 1840 to 1870. All mining has now ceased and no future mining of coal is contemplated. The age and depth of the workings varies considerably over the area and subsidence of the surface can be regarded as complete. An investigation has been undertaken and a report prepared by Professor Hibberd, Ph.D., A.R.C.S.T., M.I.Min.E., F.R.S.E. of the Department of Mining Engineering, Strathclyde University, to ascertain the effect of this mining on the proposed areas of development. The results are summarised in Appendix 2 and on fig. 40, page 143.

1.9 Fireclay deposits which represent the underclays of certain of the coal seams are being actively worked in the area north and north east of Springside (fig. 35, page 133). The method of working is by stoop and room but rarely is the whole seam extracted and consequently there has been little subsidence. It is recommended that extraction should be limited to 26% where proposed developments conflict with this mining. Working has been completed in the area near Doura where intensive coal mining has also taken place. Planning permission has been granted for the surface extraction of fireclay at a site to the east of Eglinton Castle and for fireclay mining in an area to the south east of Kilwinning. It is essential that this surface extraction should not proceed.

1.10 Sand and gravel are being extracted to the north of the Bogside golf course, south of Irvine alongside the river and road A78, at two sites on the coast south of Irvine Harbour and at sites to the south east of Irvine on Shewalton Moor. In the last area reserves appear to be very large but can only be assessed by drilling as the amounts may be limited locally as a result of the thinning of deposits or an increase in the clay content. The sand and gravel, after washing and grading, can be used for building purposes and moulding and some may be suitable for glass manufacture (fig. 35, page 133).

(D) CLIMATE

1.11 The climate of Ayrshire is largely controlled by the relatively warm waters of the Firth of Clyde and the crescent shaped backing of rising ground. Conditions deteriorate fairly rapidly inland. The Irvine area is exposed to fairly cold north-east winds at certain times of the year but the prevailing and the strongest winds are from the south west. Average annual rainfall is about 35 in. The seasonal range of mean daily temperature is about 20°F; about 38°F in January, the coldest month, to about 58°F in July and August.

(E) HISTORY

1.12 A study of a series of maps of the district shows that while Irvine and Kilwinning are ancient burghs there was little development of the hinterland until the 18th century.

1.13 Blean's map of 1654 indicates the Earl of Eglinton as the principal owner in the area. At this time settlements were sparse and were sited along the coast road with one road east from Irvine through Dreghorn and Kilmarnock There was a dramatic change in intensity of land use in the 18th century with the layout of estates and major tree planting. Roy's map of 1745 indicates the extraordinary pattern of Eglinton Park which was intensively planted from 1740 to 1820. This was accompanied by the building of the large house and a series of smaller houses with their attached policies in the hinterland. This humanised landscape was closely connected with the economic development of the district at that time, with major changes in the social order of Scotland, by improvements in agricultural methods and by the winning of mineral wealth. The district has always maintained a character of multi-use, exploiting resources of the sea, land and minerals. Considerable planting of trees in shelter belts and copses was undertaken and the remnants of these now form the basis of existing planting. The growth of the small settlements was tied to the development of mining but the quality of intervening landscape was controlled by private ownership.

1.14 The 18th century brought to the area a greatly improved system of communications and a more intensive industrialisation of the area. While the scale of operation remained small the landscape was no doubt able to absorb its various uses but the history of land use in the last 100 years shows an emerging dominance of industrial use and a gradual attrition of controlled country landscape within the environment of the towns and villages. This is most marked by the development of the I.C.I. industry at Ardeer, by the network of railways and by the more systematic mining of sand and gravel and by the collapse of estate organisation about Eglinton Castle and Shewalton.

1.15 Irvine is the oldest town in the valley; it was a Royal Burgh by the 13th century and, by the 17th century it was the administrative and economic centre for the whole of North Ayrshire.

1.16 The port area still carries a reminder of the period before the deepening of the Clyde in the 18th century when it was the chief port for Glasgow. Yet much of the fabric of the Irvine area dates from the 19th century period of coal exploitation and export. It is also significant that the main industrial landmarks of the surrounding area date from the 19th century; Ardrossan with its harbour, Ardeer Works established in 1873 and Glengarnock works, the only existing reminder of an iron and steel industry which rose and fell in the area. The decline of the extractive industry left the area without a strong base though industrialisation at Irvine was sufficient to deny it a place as a Clyde resort like Troon and Saltcoats at the extremities of Irvine Bay. In general the coastline at Irvine has not been exploited for recreation except for a golf course to the south close to Barassie.

(F) LAND USE

1.17 Existing building development in the area is concentrated at Irvine and Kilwinning with smaller settlements at Girdle Toll, Springside, Bankhead and Dreghorn. The present land use pattern is indicated in broad outline in fig. 38, page 137.

1.18 Industrial development has taken place on the Irvine and Kilwinning Industrial Estates, the former having been started to use the buildings and site of the Royal Ordnance Factory which closed in 1959. More recently Skefco and Chemstrand have taken sites at Irvine to erect new factories. Altogether some 700 acres of land are used or being developed for industrial purposes. There is also the I.C.I. Nobel Division occupying the large peninsular site of about 2,000 acres at Ardeer, on part of which a new nylon polymeter plant is now being constructed.

1.19. There is a proposal by the South of Scotland Electricity Board to erect a Power Station on a coastal site just to the south of Irvine harbour. In addition to the dominance of the station, the high chimneys and the associated installations it would probably also involve the routing of up to 4 transmission lines from the station to feed the grid. All this development, virtually in the town, could have a serious effect on the visual character of the area and on the potential value of the coast for recreational purposes. Careful studies should be made of all aspects of the problem before a final decision is reached.

1.20 The Ayrshire Central Hospital occupies a site of some 100 acres to the east of the Kilwinning-Irvine road, A78. There are no plans for this hospital in the foreseeable future although the allocation of accommodation may be changed when the new District General Hospital for North Ayrshire is built in 1968-72 at Fardale Hill Farm just outside Kilmarnock.

1.21 The Ministry of Defence have two Army stations in the area; the Eglinton Vehicle Depot, adjoining the Ayrshire Central Hospital to the north is a long term requirement and the Dundonald Camp and Rifle Range, to the west of road A78 and adjoining the radar site, will be required at least until 1970.

1.22 The Ministry of Civil Aviation have a radar station on a site at Gailes to the west of road A78. This is a short term use and the land will eventually be released for other purposes.

1.23 There are five golf courses in the area of which only the Irvine Municipal Course on Towns Moor is public.

1.24 There are twenty three buildings included in the list of Buildings of Architectural or Historic Interest in the Designated Area as follows:

Location	Building	Classification
Kilwinning	Mercat Cross	B
	Kilwinning Abbey	A
	Abbey Church and Churchyard	B
	Detached Church Tower	B
Irvine	Redburn Gates	B
	Queens Bridge	B
	Statue of Burns	A
	Heathfield	B
	Castle Grange	B
	Seagate Castle	B
	Ivy Bank	B
	Trinity Church	B
	No. 30 Kirkgate	B
	Nos. 45 - 59 Kirkgate Head	B
	Old Parish Church and Graveyard	A
	Nos. 57 - 59 High Street	B
	Town Hall	B
	Royal Bank	B
Girdle Toll	Stanecastle	B
	Stanecastle Gates	B
Dreghorn	Parish Church and Graveyard	B
West of Annick Water	Annick Lodge	A
	Perceton House	A

(G) COMMUNICATIONS

(a) Roads

1.25 The road network in the area consists basically of a coastal trunk road (A78) serving the towns between Greenock and Ayr and this is joined at Kilwinning by the A737 which runs along the Dalry valley inland to Paisley and Glasgow and at Irvine by the A736 running inland to Glasgow over the moors at Lugton, and the A71 running due east to Kilmarnock. Kilwinning is thus at a junction of three main roads and also of three secondary roads making a total of six roads radiating out from the Burgh. Likewise Irvine is at a junction of four main roads which all meet in the centre of the town and three secondary roads which join the main roads on the outskirts. Both these communities have grown up around the hub of these roads and have experienced the traffic difficulties of the radially concentric town. The coastal trunk road (A78) is being realigned to bypass these two towns and at present the bypass of Kilwinning is complete on the seaward side and the bypass of Irvine is in the design stage with an alignment on the landward side of the town. In the case of Kilwinning access to the bypass from the main inland road (A737) and from two of the minor roads (A778 and B785) still necessitates the passage of traffic through the town. At Irvine all the existing inland roads will be intercepted on the landward side and there will be no necessity for through traffic to pass through the town.

1.26 The A78 coastal trunk road will continue to serve a major function in the movement of traffic through the area; this is a major consideration in formulating proposals for the communication network for the new town.

1.27 There are three alternative roads from the new town to the Glasgow conurbation. A737 runs from Kilwinning up the Dalry valley, through Paisley and Johnstone. This is a two lane two way road through difficult terrain between Kilwinning and Dalry but is important in that it connects to the growing settlements at Dalry, Kilbirnie and Lochwinnoch, then links onto the Erskine Bridge approaches at Howwood and to the Renfrew Motorway part of which is now under construction, providing free flow radial penetration to the City's Inner Ring Road.

1.28 A736 is the shortest route and climbs out of Irvine over the moors at Lugton and into the City through Neilston and Barrhead. This is a good two lane two way road of high capacity as far as Uplawmoor but serves very few settlements other than Lugton. Beyond Uplawmoor the alignment becomes increasingly difficult and upgrading of the road standard would be costly. The entry to the City through Neilston and Barrhead is also difficult and there are no proposals in the City plan for upgrading this access.

1.29 The third alternative route to Glasgow is from Irvine along the A71 to Kilmarnock then north on trunk road A77, which is the main road from Ayr to Glasgow. The A71 Irvine to Kilmarnock road is a twisting two lane road and the capacity is further hampered by passing through the villages of Dreghorn, Bankhead and Crosshouse. The A77 Kilmarnock to Glasgow road is an undivided four lane road of high capacity and although it passes through the congested core of Kilmarnock there is a proposal to bypass the town on the eastern side. While this will remove the through traffic between Glasgow and Ayr it will still be necessary for traffic from the new town to pass through

Kilmarnock to reach the bypass. This access to the Glasgow conurbation gives motorway penetration to the City centre along the proposed Ayr Motorway to which it connects just south of Newton Mearns.

1.30 Of the three possible routes to Glasgow, therefore, the road along the Dalry valley from Kilwinning (A737) and the Ayr Kilmarnock road (A77) are considered to be the most significant for the future although the Irvine to Kilmarnock road (A71 is not suitable in its present form to connect the new town to Kilmarnock and the A77. The A736 direct route from Irvine to Glasgow will still serve a useful function in connecting the new town to Barrhead and the south west of Glasgow but due to the sparsely inhabited moorland area over much of its length, the difficulty of improving its capacity as it approaches the City, and the lack of connection to the City's freeway and expressway system it is not considered to be as signifcant as the other two.

1.31 Connection to Dumfries and the south will be along the A76 trunk road from Kilmarnock and to Edinburgh and the east will be along the A71 east of Kilmarnock. These regional outlets emphasise the need for a strong communication corridor from the new town connecting to the north, to the south and to the east of Kilmarnock. Ayr County Roads Department have estimated that all the main roads mentioned will be carrying more traffic than their design capacity by 1976. The calculations have been based on projections of the past growth of traffic on these roads without regard to the acceleration of growth which would result from the new town proposals. It follows, therefore, that a substantial capital investment in these roads will be required if the new town is to have good regional road communications.

(b) Rail

1.32 Rail communications in the area are subject to various proposals made by British Rail. It is intended that three main lines will remain for passengers and freight. These are:

- i. Glasgow to Stranraer stopping at Kilwinning and Irvine and providing a thirty minute service
- ii. Glasgow to Carlisle and the south stopping at Dalry and Kilmarnock
- iii. Mauchline to Ayr

1.33 All other lines, including the Irvine to Kilmarnock line, are expected to close for passenger use in 1966 or shortly thereafter except the Kilmarnock to Troon and Kilmarnock to Barrhead lines which will remain for a few years only. Of the remainder some will stay open to freight for a limited period particularly to serve existing collieries but all will eventually close down.

1.34 British Rail's proposals in respect of freight distribution from the new town are in terms of a road haulage system to the Glasgow liner freight depot.

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1.34 British Rail's proposals in respect of freight distribution from the new town are in terms of a road haulage system to the Glasgow liner freight depot.

1.35 The conclusions of the rail appraisal are as follows:

i. The new town will have excellent passenger communications to Glasgow Central via Paisley with a journey time of under forty five minutes and with station facilities at both Irvine and Kilwinning.

ii. Passenger communications to Carlisle and the South will require initial travel either to Dalry or Kilmarnock

iii. No passenger facilities will exist between the new town and Kilmarnock.

iv. Freight may eventually require road haulage to Glasgow

(c) Buses

1.36 The whole area is well served by local and through bus services and the operators will cooperate in every way to provide the new town with efficient services. It is fundamental that the plan should provide a network which is suitable for the operation of a good and economic hierarchy of public transport, one element of which will be bus services.

(d) Air

1.37 The new town is only ten miles from Prestwick Airport along the coastal trunk road A78 and along the passenger rail line from Glasgow to Ayr with a thirty minute service stopping at Prestwick. It also has good access by road A737 and the Renfrew Motorway to Abbotsinch Airport.

(e) Ports

1.38 There are docks at Ardrossan, owned by Ardrossan Harbour Co., at Irvine, owned by I.C.I. and at Ayr and Troon, owned by British Transport Docks. Ardrossan is the largest, with 14 berths and 17 cranes. In 1964, 350,000 passengers used the port and freight handled amounted to 1,115,000 tons. Tankers up to 19,000 tons and other vessels up to 7,500 tons can be handled. It is important, therefore, that the communication system should have regard to the need for access to Ardrossan Harbour.

H. UNBUILDABLE LAND

1.39 Although the area is relatively flat and is traversed by a number of rivers and streams, the existing flood banks are generally adequate to handle fluctuations in river levels. The main area liable to flooding is within the big loop of the River Irvine, north of Low Green.

1.40 The Shewalton Moss in the south of the area is a large area of peat, nearly all of which is unbuildable.

1.41 The I.C.I. factory at Ardeer is surrounded by a safety zone which affects some 600 acres of land. This area is not available for urban development.

I. LANDSCAPE

1.42 The landscape character of the area is strongly influenced by three main inter-related factors:

- i. Drift geology and associated soil types
- ii. Climate and proximity to the sea
- iii. Land use and misuse in the past

1.43 Geologically the site is covered with glacial deposits of boulder clay overlaid by sands and gravels which occur as raised beaches below the 60' and 40' levels respectively. The present beach occurs at a level 20' below the general coast land. Soils are mostly of a fair quality over the boulder clay although difficult drainage conditions in the sub layer have led to a predominance of dairy as against arable farming. The incidence of fluvial - glacial sands and gravels - in the Dreghorn/Bankhead area and along the lower foothills between Bankhead and Kilwinning give rise to better class soils with good drainage and these also occur on the upper areas of raised beach where the sands and gravels rarely appear on the surface. The lower raised beach area is characterised by very poor thin soils over sand and gravel with considerable areas covered by dunes of wind blown sand particularly near the coast itself. The land in this area is generally useless for farning purposes and presents a bare appearance due to lack of vegetation above the ground layer.

1.44 Climatic influences and particularly the strong and prevailing salt-laden south westerly winds underline the changes in landscape character due to geology and surface soil conditions. The presence of salt spray and high winds is most marked over the plains, formed by the raised beaches making conditions for woody vegetative growth difficult on this ground. Further inland where the effect of salt spray is very much reduced growing conditions are improved but the incidence of frost is higher particularly over the boulder clays, adding reason to the absence of arable farming on the upper areas of the foothills.

1.45 The general effect of climate, soil and geology is, therefore, to produce four main categories of landscape character:

- i. The main upper foothills, corresponding approximately to land lying above the 100' contour used both in the past and at the present time for dairy farming
- ii. The lower foothills, corresponding approximately to land between 60' and 100' above ordnance datum better quality land of traditional farming use capable of carrying arable crops and which has in the past been the location for mansions and private parks

iii. The flat lands of the raised beaches which give rise to a bleak and starved landscape

iv. The dune lands near the coast

1.46 It is significant to note that good landscape husbandry has been entirely restricted in the past to those areas above the line of the lower raised beach where considerable plantations of trees and shelter belts have existed.

1.47 The landscape attraction of large areas of land is at present impaired by piecemeal developments of low standard close to the urban settlements. The humanised pattern of field sub-division by thorn hedges with hedgerow, shelterbelt and copse planting imparts a character of quality to the hinterland landscape but closer to the existing urban settlements, tree belts have either been cut down or are now in decay. The coastline landscape remains at the moment relatively uninfluenced by development and has its own unique character as does the landscape of the river estuary and old harbour of Irvine.

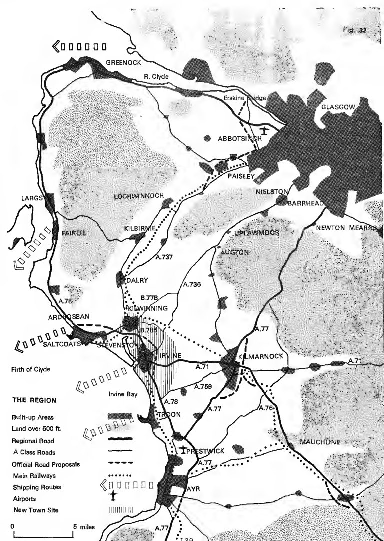
1.48 The landscape of Eglinton Castle is now in decay. Large trees must once have lined the road from Kilwinning to Irvine but practically all the timber of the estate has long since been felled. The remnants of a massive avenue of trees remains within the old park but much of this has recently been cut; almost as much again has been subjected to wind blow or has fallen down from old age. Nevertheless what remains forms a significant feature within the landscape.

1.49 There are many bings, most of them small and clothed with vegetation but one to the south of Kilwinning is fairly large and should be removed if the material can be put to economic use or other means can be found. There is also a considerable amount of dereliction arising from the worked out mining enterprises.

J. LOCAL AUTHORITIES

1.50 The new town lies in Ayr County and includes Irvine and Kilwinning Burghs and parts of Irvine, Kilwinning, Dreghorn, Dundonald and Kilmaurs County Districts (fig. 39, page 138).

Fig. 32

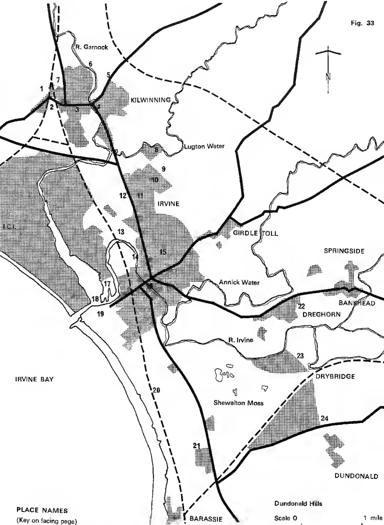

GREENOCK
R. Clyde
Erskine Bridge
GLASGOW
ABBOTSINCH
PAISLEY
NIELSTON
BARRHEAD
NEWTON MEARNS
LARGS
LOCHWINNOCH
KILBIRNIE
FAIRLIE
UPLAWMOOR
LUGTON
A.737
DALRY
A.736
B.778
A.78
KILWINNING
ARDROSSAN
B.785
SALTCOATS
STEVENSTON
IRVINE
A.77
KILMARNOCK
A.71
A.71
Firth of Clyde
Irvine Bay
A.759
THE REGION
A.78
A.77
A.76
TROON
Built-up Areas
Land over 500 ft.
Regional Road
A Class Roads
Official Road Proposals
Main Railways
Shipping Routes
Airports
New Town Site
PRESTWICK
MAUCHLINE
A.77
AYR
A.77
0
5 miles
Scale

Key to Fig. 33

PLACE NAMES

1. Doura
2. Kilwinning Station
3. Kilwinning Abbey
4. Bridgend
5. Redstone
6. Woodgreen
7. McGavin Park
8. Eglington Castle
9. Eglington Park and Belvidere Hill
10. Eglington Vehicle Dept.
11. Ayrshire Central Hospital
12. Irvine Municipal Golf Course
13. Towns Moor
14. Low Green
15. Recreation Park
16. Irvine Bridge
17. Bogside Flats
18. Irvine Harbour
19. S.S.E.B. Site
20. Gailes Station
21. Dundonald Camp
22. Corsehill Mount
23. Skefco
24. Chemstrand.

Fig. 33



PLACE NAMES
(Key on facing page)

Fig. 34

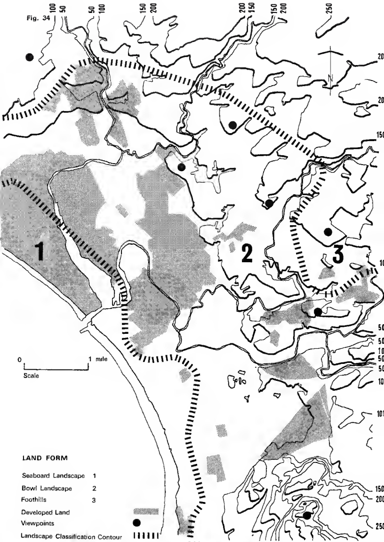
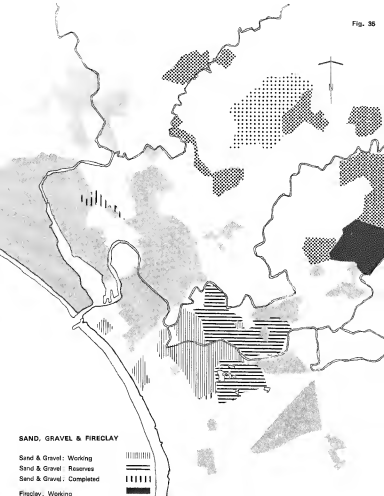

100
50
50
100
150
200
200
150
150
200
250
N
1
2
3
0
1 mile
Scale
LAND FORM
Seaboard Landscape 1
Bowl Landscape 2
Foothills 3
Developed Land
Viewpoints ●
Landscape Classification Contour
100
200
300
400
450

Fig. 35



SAND, GRAVEL & FIRECLAY

Fig. 36

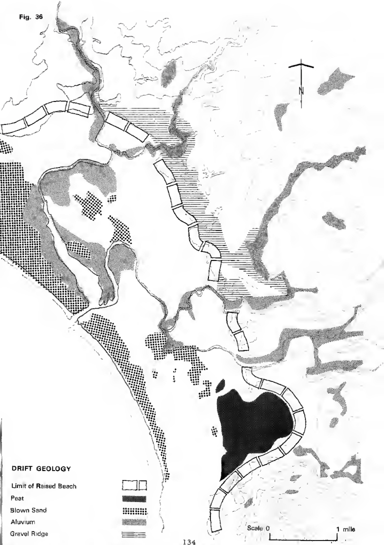
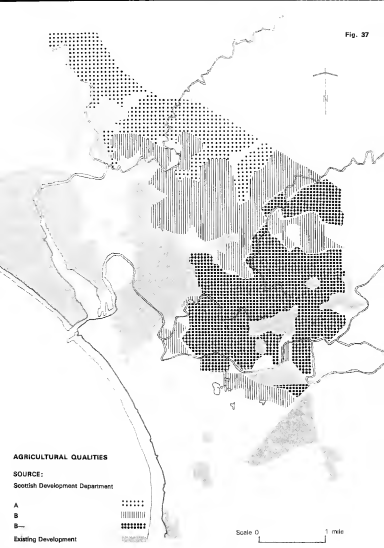

N
DRIFT GEOLOGY
Limit of Raised Beach
Peat
Blown Sand
Aluvium
Gravel Ridge
Scale 0
1 mile

Fig. 37

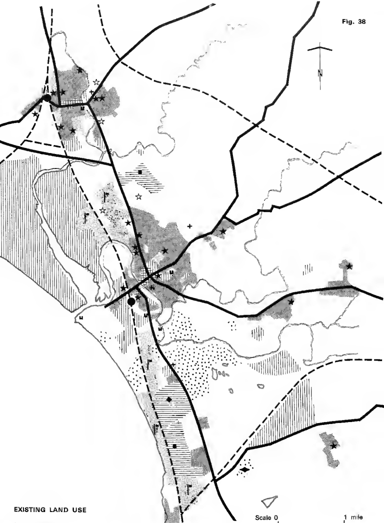

AGRICULTURAL QUALITIES
SOURCE:
Scottish Development Department
A
B
B—
Existing Development
N
Scale 0
1 mile

Key to Fig. 38

EXISTING LAND USE

Areas primarily for residential use	▒
Areas primarily for industrial use	‖‖‖
Areas primarily for commercial use	▦
Open space	░
Surface Minerel Workings	∴
School	★
Hospital	☆
Cemetery	+
Public Utility	⊔
Passenger Station	●
Golf Course	⚑
War Department	▪
Ministry of Civil Aviation	◆
Querry	◆
Reservoir	◁

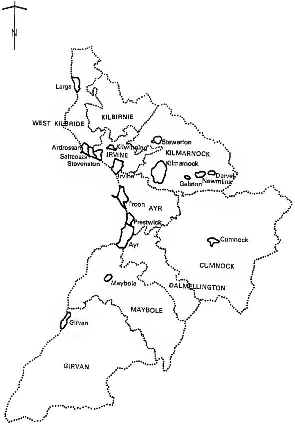
Fig. 38



EXISTING LAND USE

(Key on Facing Page)

Fig. 39



AYR COUNTY ADMINISTRATIVE AREAS

Burgh Boundaries ———

District Boundaries ....

APPENDIX 2

2. 1 The strata underlying the new town site are:

Coal Measures
Passage Group
Carboniferous Limestone Series

2. 2 The Coal Measures include coals and fireclays, and the Passage Group contains the Ayrshire Bauxitic Clay. The Carboniferous Limestone does not outcrop within the area, and as the National Coal Board have no intention of working any coals within the area there will be no further extraction below the Ayrshire Bauxitic Clay.

2. 3 The area is part of a synclinal basin stretching from Saltcoats to Kilmarnock, and is interrupted by numerous faults and igneous intrusions such as dykes and sills. The dips are generally gentle, and together with the faulting this means that there are numerous repeated coal outcrops. Some of the coal seams are variable in thickness and quality, and a generalised section of the Coal Measures down to the Ayrshire Bauxitic Clay marking the top of the Passage Group as follows

	Thickness in.
McNaught Coal,	36
Strata 15 ft.	
Tourha' Coal	15 to 36
Strata 55 ft.	
Major Coal	30
Strata 70 ft.	
Five-Quarter Coal	36 to 42
Strata 45 ft.	
Linn Bed Coal	0 to 18
Strata 10 ft.	
Parrot Coal	36
Strata 10 ft.	
Turf Coal	6 to 30
Strata 10 ft.	
Upper Wee Coal	9 to 24
Strata 105 ft.	

FUTURE EXTRACTION

2.11 Peter Spence & Co. Ltd. have a lease on the Ayrshire Bauxitic Clay, near to Fergushill. This clay is just below the Kilwinning Main coal, and will be over 100 ft. deep within the new town area. It is unlikely that any extraction will affect the new town, but if there is any approach to building areas it should be possible to reduce the percentage of extraction so that the mineral loss is small and there is no danger of subsidence. Messrs. J. & R. Howie Ltd. have worked within the area at Drummuir from their Muirside and Southhook Pits. Their latest working in the Ladyha' coal and fireclay was at a depth of 300 ft. Again partial sterilisation would take care of any future working.

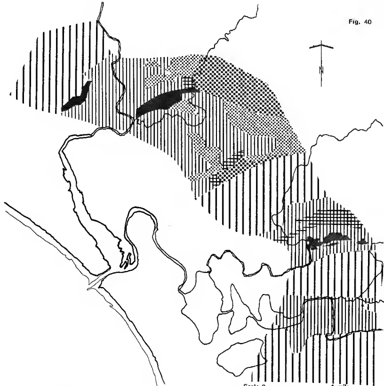
CONCLUSIONS

2.12 Of the total area described it is considered that there should be no building on approximately 3% or 160 acres, two-storey building only on 16% or 880 acres, general building on 50% or 2,740 acres and unrestricted building on 31% or 1,700 acres out of a total acreage of 5,480. More accurate knowledge, particularly from drilling, will tend to reduce the areas on which restrictions have been placed.

2.13 Throughout the area there are about 160 pit shafts and surface mines known. These are all danger points and in every case all practicable measures should be taken to find them and to ensure their safety. Reference should in all cases be made to the most original plan showing them so that errors of copying are reduced. Aerial photographs will be of help as they often make apparent, features shown on old plans but not now visible on the surface. Drilling or scraping off the surface will be required to expose them, and there are magnetic and electrical methods of geophysical surveying which have been proved to be useful and cheap.

2.14 When the Development Corporation is set up, all the mining information can be made available to the Engineering and Planning Departments; all future borehole information should be added to the mining records in order that they can be kept up to date and re-interpreted. The keeping of such information could perhaps best be done by a qualified mining surveyor who could normally operate as a member of the engineering survey staff, although the interpretation should be carried out by a mining engineer.

Fig. 40



COAL MINING IMPLICATIONS

Categories of Land

SOURCE:

Report by Professor G. Hibberd

1. No Restrictions	I I I I
2. General Building	IIIIIII
2a. Further investigation required	#
3. Two-storey housing and p. schools	░
3a. Further investigation required	▓
4. Severe restrictions	■

APPENDIX 3

Travel to work

3.1 The present travel to work pattern of the area may in part arise from short term pressures but it at least assists in the identification of the present characteristics and needs of Irvine and Kilwinning. It has, therefore, been studied in some detail on the basis of information supplied by the Ministry of Labour. The Ministry stress that their estimates of travel to work must tend to understate the increasing element of private car movement. It is, therefore, the general pattern which is presented below in three tables.

3.2 Table 3.1 includes the June, 1965 figures for movement in and out of the area which for this purpose is assumed to be that covered by the Ministry of Labour Local Office Areas of Irvine and Kilwinning; which cover a total working population of 12,650. Apart from 870 work people who travel between the two communities (particularly women from Kilwinning to Irvine), some 5,760 people travel across the area boundaries daily; the percentage of the resident working population travelling out is high and includes a notable proportion going to Glasgow. Between 1964 and 1965, however, there was an increase in travelling in to work in the area which reduced the daily net outflow of workers from 2,055 to 1,620. Commuting will obviously remain a feature of employment patterns and may be adopted from choice or pressure by part of the incoming population but it is considered that land should be allocated in the plan to provide for a reduction in the proportion of the population travelling from the area and for a longer term increase in inward flows.

3.3 Table 3.2 shows the statistical effect of adding to the growth area firstly Stevenston and Ardrossan and then building up the wider area of what might be termed the North Ayrshire Manufacturing Region. This is taken to include all of the region within 15 miles of Irvine except the important employment area of Ayr, which is self-contained and based on service activities rather than manufacturing skills, and Kilbirnie/Dalry which now have their strongest link with the Paisley area.

3.4 Table 3.3 summarises all the individual flows within the area and across its borders.

3.5 Kilwinning is particularly dependent on the Stevenston area because of the I.C.I. works at Ardeer and their importance to Ardrossan is even more basic. These interdependences form the strongest integrating factor within the general complex west of Irvine. Irvine also has an important employment link with Kilmarnock with 645 people travelling out to work; this movement is one of several reflecting the decrease of local unemployment from west to east.

3.6 Irvine, therefore, occupies a pivotal position between the two employment centres of Stevenston and Kilmarnock. The Chemstrand development can be expected next year to establish a wide pattern of recruitment, and with further industrial projects sited in a new town at Irvine it is possible that the present position may be reversed with more workers coming into the new town and even closer integration within the region.

3.7 Mobility in the region is certainly increasing, particularly in the last decade in movements to and from Irvine itself. There has also been increased travel out of the region mainly to the Clyde Valley; of the 120, 000 work people resident within 15 miles of Irvine 5, 560 now travel beyond the area to work, double the number doing so in 1954. Changing conditions, with the decline of old established industries have induced a wider acceptance of longer daily work journeys which may be expected to continue and affect the integration of the new town within the general scene.

Table 3.1

IMPORTANCE OF SURROUNDING PLACES TO NEW TOWN

Ministry of Labour Local Office Area	Total Gross Movements (in + out)	Daily Travel OUT of area		Daily Travel IN to area		Net Balance
		Numbers	% of Area Resident Working Population	Numbers	% of Employment in area	
Stevenston	1,710	1,295	9.0	415	3.3	- 880
Kilmarnock	1,205	750	5.3	455	3.8	- 295
Troon	430	275	1.9	155	1.2	- 120
Ardrossan	620	135	0.9	485	3.8	+ 350
Glasgow	520	470	3.3	50	0.4	- 420
Dalry	415	255	1.8	160	1.3	- 95
Kilbirnie	185	110	0.8	75	0.6	- 35
Paisley	140	115	0.8	25	0.2	- 90
Ayr	195	80	0.6	115	0.9	+ 35
Other Areas	235	145	1.0	90	0.7	- 55
Total	5,655	3,630	25.4	2,025	16.0	-1,605

Derived from Ministry of Labour estimates of daily movement. June, 1965

Table 3.2

IMPORTANCE OF NEW TOWN IN REGIONAL EMPLOYMENT BALANCE

Local Office Areas within 15 miles of Irvine	1 Insured Population working in area June, 1965	2 Net balance from travel-to-work June, 1965	3 Resident Working * Population (approx.)	4 % of insured population (col.1) resident in All other areas	5 New town area	6 % of resident working population (col. 3) working daily in All other areas	7 New town area
A. Irvine	10,394	- 235	10,629	20	85	22	79
B. Kilwinning	2,256	- 1,370	3,626	33	76	58	59
Sub-total New town area A & B	12,650	- 1,605	14,255	17	63	26	74
C. Stevenston	7,714	+ 3,575	4,139	58	17	21	10
D. Ardrossan	6,947	- 3,110	10,057	7	2	37	5
E. Kilmarnock) F. Stewarton)	31,145	+ 1,035	30,110	11	4	8	2
G. Newmilns	3,543	- 1,215	4,758	6	0	30	0
H. Troon	3,219	- 180	3,399	25	8	29	5
J. Kilbirnie) K. Dalry)	6,938	- 840	7,778	13	5	22	3
L Ayr	35 545	- 1,730	37, 275	3	Small	7	Small

* Colum 3 - derived from combination of figures in columns 1 and 2. It will be noted that combination of two separate series of estimates precludes precise reading.

Ministry of Labour estimates, June, 1965

Table 3.3

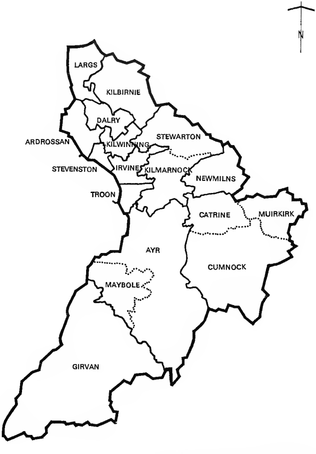
ESTIMATES OF TRAVEL-TO-WORK, MID-1965
Between employment areas within 15 miles of Irvine, including further flows

WORKPLACE	SOURCE OF WORKPEOPLE											TOTAL OF INFLOWS
	Irvine	Kilwinning	Stevenston	Ardrossan	Troon	Kilmarnock	Ayr	Kilbirnie/ Dalry	E. Renfrew-shire	Glasgow	Other Areas	
Irvine	-	645	260	305	140	420	105	115	25	50	30	2,095
Kilwinning	225	-	155	180	15	35	10	120	10	0	5	755
Stevenston	525	770	-	2,420	75	90	35	330	15	60	120	4,440
Ardrossan	35	100	225	-	0	45	0	30	10	5	130	580
Troon	230	45	25	65	-	235	145	15	0	35	0	795
Kilmarnock	645	165	75	90	385	-	525	100	10	95	300	2,390
Ayr	60	20	5	15	110	410	-	10	0	0	300	930
Kilbirnie/Dalry	155	210	70	190	10	80	5	-	80	30	45	875
E. Renfrewshire	140	35	50	70	20	80	40	865				(1,300)
Glasgow	340	130	0	310	215	385	0	90				(1,470)
Other Areas	20	5	5	50	15	775	1,850	70				(2,790)
TOTAL OF OUTFLOWS	2,375	2,125	870	3,695	985	2,555	2,715	1,745	(150)	(275)	(930)	

NOTES Definition of areas follows that of Ministry of Labour Local Office Areas except for the following aggregations :-
"Kilmarnock" includes Kilmarnock and Newmilns Local Offices, with Stewarton Sub-Office
"E. Renfrewshire" comprises Paisley, Johnstone, Renfrew and Barrhead Local Offices
"Glasgow" comprises 10 local offices approximating to the City Boundaries

Ministry of Labour Estimates, June, 1965

Fig. 41



AYR COUNTY EMPLOYMENT EXCHANGE AREAS

County Boundary	━━━
Local Office Boundaries	───
Sub-Office Boundaries	………

Key to Fig. 42

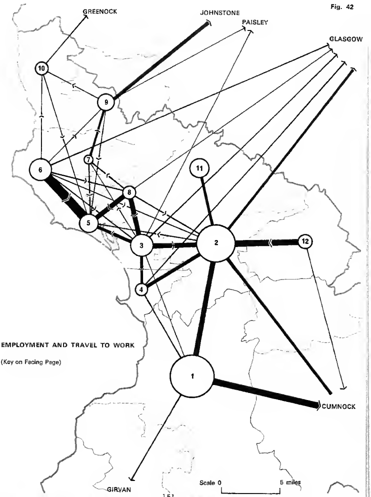
100-200 Journeys per day (total both directions)	▬
200-400	▬
400-600	▬
600-800	▬
800-1,000	▬
1,200-1,500	▬
2,600	▬

Arrow indicates the predominate direction (if any) of morning travel to work

1.	Ayr	35, 545
2.	Kilmarnock)	31, 145
3.	Stewarton)	
4.	Irvine	10, 394
5.	Troon	3, 219
6.	Stevenston	7, 714
7.	Ardrossan	6, 947
8.	Dalry	1, 800
9.	Kilwinning	2, 256
10.	Kilbirnie	5, 138
11.	Largs	3, 085
12.	Newmilns	3, 543

Figures above are the provisional numbers of insured population in local Employment Exchange areas for 1965.

Fig. 42



EMPLOYMENT AND TRAVEL TO WORK

(Key on Facing Page)

APPENDIX 4

Population

Table 4.1

POPULATION STATISTICS FOR AYRSHIRE 1961 - 1965

Area	Population 1961 (Census)	Population 1965 Registrar General's Annual Estimates	Population Change 1961 - 1965
LARGE BURGHS			
Ayr	45,276	46,218	+ 942
Kilmarnock	47,509	48,295	+ 786
SMALL BURGHS			
Ardrossan	9,753	9,531	- 42
Cumnock	5,403	5,746	+ 343
Darvel	3,255	3,191	- 64
Galston	4,023	3,975	- 48
Girvan	6,159	6,208	+ 49
Irvine	16,911	19,370	+ 2,459
Kilwinning	7,289	7 521	+ 232
Largs	9,104	8,779	- 325
Maybole	4,677	4,645	- 32
Newmilns	3,541	3,443	- 98
Prestwick	12,562	12,729	+ 167
Saltcoats	14,182	14,225	+ 43
Stevenston	10,164	10,789	+ 625
Stewarton	3,387	3,478	+ 91
Troon	9,927	9,922	- 5
DISTRICTS			
Ayr	12,955	13,800	+ 845
Cumnock	36,463	35,600	- 863
Dalmellington	14,138	14,100	- 36
Girvan	5,290	5,100	- 190
Irvine	9,151	6,850	- 301
Kilbirnie	21,951	22,400	+ 449
Kilmarnock	15,484	17,350	+ 1,866
Maybole	5,741	5,550	- 191
West Kilbride	-	8,850	-
Newmilns	1 763	-	-
Saltcoats	6,946	-	-
Totals	343,002	347,665	+ 6,902

4.1 From Table 4.1 it can be seen that between 1961 and 1965 Irvine had the largest growth in population of any town in the County. Over the same period the combined small burghs of Irvine and Kilwinning accounted for almost 40% of the total population increase of Ayrshire.

POPULATION PROJECTION 'A'

4.2 This is a detailed projection which deals with the growth of population in the new town both by natural increase and immigration. The period covered is from 1st January, 1967 to 1st January, 1973 inclusive.

4.3 It is significant that the population age structures of new towns in Britain bear a close resemblance one to another whilst at the same time tending to be on average much younger than the national age structure. Table 2 sets out the population age structures for a selection of the new towns together with the combined figures for Irvine and Kilwinning and relates them to the national average for Scotland.

4.4 In both population projections A and B it is assumed that all newcomers to the new town will have a basically similar age and sex structure to that of the existing new towns. This assumption, failing the lack of evidence to the contrary, applies to the people who will move into private houses as well as those moving into Development Corporation or S. S. H. A. houses.

4.5 Projection A is in three parts:

i. A projection of growth in houses to be provided under the auspices of the Scottish Special Housing Association and the Development Corporation

ii. A projection of growth in dwellings to be constructed by speculative and private developers in the new town

iii. A projection of the population growth of the existing population of the new town area. It is assumed that council house building will continue but will lead to a relocation of existing households created within the existing population, and not to any net gain in population.

BIRTH RATES

1. Newcomers

(a) New Town

4.6 As the proportion of married women moving into the new town will be higher than amongst the existing population of the town, the birth rate per 1,000 women must be adjusted to allow for this. For this purpose the legitimate and illegitimate birth rates in Scotland are calculated and then a new composite birth rate per 1,000 women of all kinds is derived from the marital status cross-section of a typical new town.

Table 4.2

POPULATION AGE STRUCTURE 1981 CENSUS

AGE GROUP	PERCENTAGE OF TOTAL POPULATION															
	Scotland	Bracknell	Aycliffe	Peterlee	Basildon	Harlow	Hatfield	Hemel Hempstead	Stevenage	Welwyn New Town	Corby	Crawley	Cwmbran	Glenrothes	East Kilbride	Cumber-nauld	Irvine & Kilwinning
0 - 4	9.3	13.9	14.6	17.9	13.0	14.6	11.0	10.9	14.0	11.3	12.8	12.4	12.3	10.0	15.0	12.5	9.9
5 - 14	16.3	19.4	20.5	21.9	19.4	22.3	19.2	20.0	20.6	18.9	20.7	20.8	18.9	22.4	20.7	17.9	17.8
15 - 24	14.5	10.4	10.5	11.0	11.6	10.3	12.0	10.8	11.0	12.1	14.4	9.9	11.3	10.8	9.3	11.8	13.4
25 - 34	12.4	19.6	22.2	23.5	18.4	20.3	16.3	16.3	20.4	16.0	15.9	18.9	18.2	20.0	19.6	19.0	14.0
35 - 44	13.0	18.8	17.1	13.8	14.7	17.1	16.7	17.1	16.9	15.6	14.8	18.0	18.3	14.6	17.0	14.1	14.1
45 - 54	12.5	9.5	7.8	5.6	9.3	8.2	11.9	11.3	8.8	12.4	11.8	9.7	10.5	8.1	9.0	10.8	13.1
55 - 64	11.3	5.1	3.7	3.4	6.3	3.8	7.0	6.8	4.5	7.5	6.4	5.2	6.7	4.5	5.1	7.7	9.7
65 +	10.7	5.3	3.6	2.9	7.3	3.4	5.9	6.8	3.8	8.2	3.2	5.1	5.8	3.8	4.3	5.6	8.0
Totals	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Years after first overspill		10	11	11	10	11	10	11	11	10	9	11	9	9	11	4	-

4.7 The sequence of calculations is thus:

Table 4.3a

BIRTHS IN SCOTLAND BY AGE OF MOTHER AND MARITAL STATUS
(Annual Report of the Registrar General for Scotland, 1963)

Age of Mother at birth	Total live births	Legitimate births	Illegitimate births
15 - 19	7,362	6,156	1,206
20 - 24	31,861	30,082	1,779
25 - 29	32,024	30,936	1,088
30 - 34	19,290	18,833	657
35 - 39	9,282	8,840	442
40 - 44	2,645	2,500	145
45 - 49	141	131	10

Table 4.3b

MARITAL STRUCTURE OF SCOTLAND, 1963
(Annual Report of the Registrar General for Scotland, 1963)

Age Group	Total Females	Married Females	Single/widowed divorced females
15 - 19	205,900	13,400	192,500
20 - 24	174,200	93,900	80,300
25 - 29	164,000	132,300	31,700
30 - 34	165,100	141,700	23,400
35 - 39	168,800	141,200	27,600
40 - 44	177,800	147,900	29,900
45 - 49	162,600	128,400	34,200

4.8 By a combination of Tables 4.3a and 4.3b the national age specific legitimate and illegitimate birth rate for Scotland in 1963 can be deduced:

Table 4.3c

AGE SPECIFIC BIRTH RATE FOR SCOTLAND

Age of Mother at birth	Legitimate births per 1,000 married females	Illegitimate births per 1,000 single, widowed and divorced females
15 - 19	459	6
20 - 24	320	22
25 - 29	234	34
30 - 34	131	28
35 - 39	63	16
40 - 44	17	5
45 - 49	1	-

Table 4.3d

MODEL AGE STRUCTURE FOR A YEARS IMMIGRANT INTAKE.
AGES OF IMMIGRANTS AS AT START OF YEAR OF INTAKE.

Age	Total Population	Males Single, widowed and Divorced	Males Married	Females Single, widowed and Divorced	Females Married
Under 1	380	200	-	180	-
1	390	205	-	185	-
2	360	190	-	170	-
3	310	160	-	150	-
4	240	125	-	115	-
5	240	125	-	115	-
6	230	120	-	110	-
7	200	105	-	95	-
8	180	95	-	85	-
9	170	90	-	80	-
10	150	80	-	70	-
11	140	70	-	70	-
12	120	60	-	60	-
13	120	60	-	60	-
14	90	45	-	45	-
15	70	35	-	35	-
16	60	30	-	30	-
17	60	30	-	30	-
18	60	30	-	29	1
19	80	40	-	24	16
20 - 24	920	175	229	86	430
25 - 29	1,520	52	624	36	808
30 - 34	1,260	11	634	26	589
35 - 39	910	7	430	12	461
40 - 44	570	7	324	8	231
45 - 49	380	7	213	16	144
50 - 54	230	7	117	17	89
55 - 59	150	3	70	19	58
60 - 64	180	4	80	47	49
65 - 69	130	9	22	60	29
70 over	100	8	25	45	22
	10,000	2,185	2,778	2,110	2,927

This age structure is deduced from an analysis of the age structure of immigrants to other new towns. The breakdown by marital status is based upon the proportion of each age group in Harlow in 1963 which fell into each of the four status divisions: no better basis is available, and amongst ages below 20 the numbers of boys and girls in each group are smoothed relative to one another.

4.9 As the total live births per 1,000 females = 1,000 (legitimate birth rate x married females + illegitimate birth rate x single, widowed and divorced females) ÷ total females, the birth rates for women newcomers can be calculated by applying the rates derived in Table 4.3c to the model intake population of Table 4.3d thus:

Table 4.3e

COMBINED BIRTH RATE FOR FEMALE NEWCOMERS

Age of Mother at birth	Legitimate birth rate	x	Married Females	+	Illegitimate birth rate	x	Single, widowed and divorced females	÷	Total females	=	Combined birth rate
15 - 19	1,000(0.459	x	17	+	0.006	x	148)	÷	185	=	52.7
20 - 24	1,000(0.320	x	430	+	0 022	x	86)	÷	516	=	270.3
25 - 29	1,000(0.234	x	808	+	0.034	x	36)	÷	844	=	225.5
30 - 34	1,000(0.131	x	589	+	0.028	x	26)	÷	615	=	126,7
35 - 39	1,000(0.083	x	461	+	0.016	x	12)	÷	473	=	61.7
40 - 44	1,000(0.017	x	231	+	0.005	x	8)	÷	239	=	16.3
45 - 49	1,000(0.001	x	144	+	-	x	16)	÷	160	=	0.6

The projection technique requires that these birth rates must be translated into births per female rather than per 1,000 females.

(b) Private Houses

4.10 It is assumed for the purposes of this projection that the age and sex structure of the population moving into private houses will be the same as that for the population moving into Development Corporation houses. Accordingly the birth rates calculated above are assumed to apply.

2. EXISTING POPULATION

4.11 As in the case of the newcomers, differences in the proportion of married and unmarried females in Irvine and Kilwinning compared with Scotland require an adjustment to the birth rates known for that area as follows:

Table 4.4

COMBINED BIRTH RATE FOR FEMALES IN THE HOME POPULATION

Age of Mother at birth	Legitimate birth rate	x	Married Females	+	Illegitimate birth rate	x	Single, widowed and divorced females	÷	Total females	=	Combined birth rate
15 - 19	1,000(0.459	x	59	+	0.006	x	796)	÷	855	=	37.3
20 - 24	1,000(0.320	x	481	+	0.022	x	361)	÷	842	=	192.2
25 - 29	1,000(0.234	x	712	+	0.034	x	119)	÷	831	=	204.6
30 - 34	1,000(0.131	x	821	+	0.028	x	97)	÷	918	=	120.2
35 - 39	1,000(0.083	x	798	+	0.016	x	125)	÷	923	=	56.7
40 - 44	1,000(0.017	x	700	+	0.005	x	116)	÷	818	=	15.3
45 - 49	1,000(0.001	x	722	+	-	x	152)	÷	874	=	0.8

4.12 The projection technique requires that these birth rates must be translated into births per female rather than per 1,000 females. The total births per annum in the projections are divided according to the national proportions for Scotland: 51.3% male and 48.7% female.

4.13 It is assumed that the birth rates calculated above will remain constant for the period of projection A.

Table 4.5

AGE SPECIFIC DEATH RATES FOR SCOTLAND
(Annual Report of the Registrat General for Scotland, 1963)

Age Group	Death Rates / 1,000 persons	
	Male	Female
Under 1	29.53	22.93
1 - 4	1.21	0.92
5 - 9	0.61	0.30
10 - 14	0.47	0.25
15 - 19	0.79	0.32
20 - 24	1.01	0.49
25 - 29	1.19	0.80
30 - 34	1.42	1.13
35 - 39	2.60	1.74
40 - 44	3.79	2.82
45 - 49	7.10	4.35
50 - 54	11.81	6.58
55 - 59	20.94	10.25
60 - 64	33.96	17.42
65 - 69	53 12	28.30
70 +	119.24	86.53

4.14 The above rates must be converted into death rates per person. It is assumed that the death rates given above will remain constant during the period of projection A and apply to all three population categories.

BUILDING RATES

4.15 It is assumed that each Development Corporation house and each private house will bring an immigrant household into the area. It is also assumed that each new council house will either rehouse an established household from the existing population or else house a new household created within the existing population and thus have no effect on the total number or structure of the population in the town.

Table 4.6

PROJECTED BUILDING RATE

Period January 1st to January 1st	New Town House Completions	Private House Completions	Immigrants to New Town Houses	Immigrants to Private Houses
1967-1968	200	100	640	300
1968-1969	400	150	1,280	450
1969-1970	600	200	1,920	600
1970-1971	800	250	2,560	750
1971-1972	1,000	300	3,200	900
1972-1973	1,000	330	3,200	990

4.16 The above building rates are regarded as being optimum for the new town and take into account such factors as the growth in the number of job opportunities over the period; the sewerage and water supply capacity of the area; the possible constructional capabilities of the building industry and the necessary design time for such a programme.

IMMIGRANTS

Newcomers to New Town Housing

4.17 It is assumed that the immigrant age structure for newcomers to S.S.H.A., new town and private housing will be similar to that of a new town so a sex/age breakdown can be deduced from an analysis of the age structure of immigrants to other new towns. (See Table 4.7, page 160)

Emigrants

4.18 It is assumed that those emigrating during the period of the projection will be replaced by people equal in age and numbers, and that in consequence the projection need not account for turnover amongst houses. For the short term purpose of this projection this assumption is acceptable on the grounds of expediency and ignorance as to the mechanism and structure of turnover amongst the established stock of houses. (See Tables, 4.8, 4.9, 4.10 and 4.11, pages 161-4).

POPULATION PROJECTION 'B'

4.19 This projection is more general and is a series of three separate projections for each population category as in projection A. Because of the many intangibles involved in the projection of population over a long period a range of figures has been calculated for each year from January 1st, 1973 to January 1st, 1990. The range is provided by making different assumptions about the rate of house building. These rates are purely long range estimates and must be kept under constant review during the growth of the town.

Table 4 .7

Age	Males	Females
Under 1	2.00	1.80
1	2.05	1.85
2	1.90	1.70
3	1.60	1.50
4	1.25	1.15
5	1.25	1.15
6	1.20	1.10
7	1.05	0.95
8	0.95	0.85
9	0.90	0.80
10	0.80	0.70
11	0.70	0.70
12	0.80	0.60
13	0.60	0.60
14	0.45	0.45
15	0.35	0.35
16	0.30	0.30
17	0.30	0.30
18	0.30	0.30
19	0.40	0.40
20 - 24	4.04	5.16
25 - 29	6.76	8.44
30 - 34	6.45	8.15
35 - 39	4.37	4.73
40 - 44	3.31	2 39
45 - 49	2.20	1.60
50 - 54	1.24	1.06
55 - 59	0.73	0.77
60 - 64	0.84	0.96
65 - 69	0.41	0.89
70 over	0.33	0.67
	49.83	50.37

Average household size on immigration

New town and S.S.H.A. housing - 3.2 persons

Private housing - 3.0 "

Table 4.8

POPULATION OF THE NEW TOWN

AGE GROUP	1967 1st January		1968 1st January		1969 1st January		1970 1st January		1971 1st January		1972 1st January	
	M	F	M	F	M	F	M	F	M	F	M	F
Under 1	354	291	371	353	408	381	447	423	496	471	575	545
1	313	291	362	301	394	376	440	418	498	472	562	533
2	360	294	332	309	397	333	445	423	507	479	582	548
3	284	307	378	310	365	339	444	376	508	480	585	548
4	310	338	299	322	405	336	406	377	497	425	573	542
5	262	307	322	348	321	342	437	365	447	415	548	472
6	268	259	274	317	344	368	353	371	478	403	498	462
7	259	284	300	269	294	336	374	396	393	407	527	448
8	297	275	269	293	318	285	320	360	409	427	436	448
9	262	250	308	283	285	306	342	306	351	388	448	462
10	318	265	271	257	322	297	307	327	372	332	388	421
11	278	262	323	271	285	269	342	314	333	350	405	380
12	285	262	284	288	335	283	302	286	365	337	361	378
13	297	294	271	268	295	279	351	299	322	306	389	361
14	344	300	303	300	282	279	311	295	371	319	346	330
15	224	205	348	304	311	308	294	291	326	310	369	337
16	224	224	227	208	354	310	320	317	306	303	340	324
17	272	240	237	227	232	213	362	318	330	327	319	318
18	231	221	275	243	232	232	240	221	372	328	343	340
19	212	224	234	224	280	248	240	240	250	231	365	341
20 -	863	1100	937	1145	1045	1218	1207	1336	1324	1459	1449	1569
25 -	1021	1064	1045	1159	1130	1283	1269	1466	1461	1896	1696	1962
30 -	1115	1198	1155	1236	1245	1329	1385	1484	1575	1698	1816	1966
35 -	1115	1204	1157	1248	1237	1330	1355	1455	1515	1623	1719	1842
40 -	1052	1085	1094	1117	1164	1191	1264	1288	1396	1414	1560	1569
45 -	1055	1141	1071	1137	1109	1159	1174	1205	1263	1274	1379	1387
50 -	975	995	992	1029	1015	1063	1058	1104	1117	1156	1191	1221
55 -	641	880	860	887	881	921	910	964	949	1010	997	1063
60 -	591	755	629	772	670	799	711	832	755	876	802	927
65 -	442	600	453	823	472	854	499	687	529	728	566	775
70 over	604	678	620	927	639	981	661	1044	690	1114	725	1191
Totals	15326	16273	15989	16954	17061	18050	18570	19588	20505	21558	22899	23966
	31,599		32,943		35,111		38,158		42,081		46,865	

Table 4.9

EXISTING POPULATION

AGE GROUP	1967 1st January M	F	1968 1st January M	F	1969 1st January M	F	1970 1st January M	F	1971 1st January M	F	1972 1st January M	F
Under 1	354	291	361	343	382	343	380	342	361	342	363	344
1	313	291	343	284	350	335	351	335	349	334	350	334
2	360	294	313	291	343	284	350	335	351	335	349	334
3	284	307	360	294	313	291	343	284	350	335	351	335
4	310	338	284	307	360	294	313	291	343	284	350	335
5	262	307	310	338	284	307	360	294	313	291	343	284
6	288	259	262	307	310	336	284	307	360	294	313	291
7	259	284	286	259	262	307	310	338	284	307	360	294
8	297	275	259	284	288	259	262	307	310	338	284	307
9	262	250	297	275	259	284	288	259	262	307	310	338
10	316	265	262	250	297	275	259	284	288	259	262	307
11	278	262	316	265	262	250	297	275	259	284	288	259
12	265	262	276	262	316	265	262	250	297	275	259	284
13	297	294	265	262	278	262	316	265	262	250	297	275
14	344	300	297	294	265	262	278	262	316	265	262	250
15	224	205	344	300	297	294	265	282	278	262	316	265
16	224	224	224	205	344	300	297	294	285	262	278	262
17	272	240	224	224	224	205	344	300	297	294	265	262
18	231	221	272	240	224	224	224	205	344	300	297	294
19	212	224	231	221	272	240	224	224	224	205	344	300
20 -	863	1100	902	1103	952	1103	1033	1122	1050	1122	1054	1087
25 -	1021	1064	988	1086	970	1082	965	1065	977	1091	1000	1092
30 -	1115	1196	1094	1175	1071	1156	1049	1140	1031	1128	1018	1120
35 -	1115	1204	1113	1201	1106	1194	1096	1185	1083	1174	1070	1163
40 -	1052	1065	1060	1090	1067	1110	1071	1124	1073	1134	1071	1139
45 -	1055	1141	1048	1121	1043	1110	1041	1105	1039	1104	1039	1105
50 -	975	995	979	1017	974	1031	977	1040	979	1048	980	1051
55 -	841	860	851	879	857	898	663	917	889	933	874	946
60 -	591	755	622	764	648	775	869	787	686	800	700	814
65 -	442	600	448	614	459	626	475	640	487	653	502	665
70 over	604	876	616	919	628	958	640	997	654	1035	668	1072
Totals	15326	16273	15511	16474	15685	16664	15864	16855	16041	17043	16217	17208
	31,599		31,985		32,349		32,719		33,084		33,425	

Table 4 . 10

POPULATION IN NEW TOWN AND 6.S.H.A. HOUSING

AGE GROUP	1967 1st January M	F	1968 1st January M	F	1969 1st January M	F	1970 1st January M	F	1971 1st January M	F	1972 1st January M	F
Under 1	NOT APPLICABLE	NOT APPLICABLE	7	7	29	27	64	80	98	94	159	151
1			13	12	32	30	86	81	112	104	158	149
2			13	12	39	38	71	86	118	108	178	163
3			12	11	37	34	75	89	120	110	179	162
4			10	10	32	30	68	83	116	107	171	158
5			8	7	26	25	56	52	100	92	156	144
6			8	7	24	22	50	47	88	81	140	129
7			8	7	23	21	47	43	81	75	128	116
8			7	6	21	19	43	39	74	67	115	105
9			8	5	19	17	39	35	67	61	104	94
10			6	5	18	15	38	32	62	55	96	87
11			5	4	16	14	33	28	56	50	86	77
12			4	4	14	13	29	27	51	48	78	72
13			4	4	12	12	26	25	44	42	70	65
14			4	4	12	12	24	24	41	40	63	61
15			3	3	10	10	21	21	36	38	55	54
16			2	2	7	7	17	17	30	30	47	47
17			2	2	6	6	13	13	25	25	40	40
18			2	2	6	6	12	12	21	21	35	35
19			2	2	6	6	12	12	20	20	31	31
20-			24	29	67	83	130	160	208	256	303	370
25-			39	50	116	145	226	282	366	456	533	665
30-			42	42	128	129	249	258	410	432	608	647
35-			30	32	94	98	192	201	325	340	494	518
40-			23	18	69	58	142	121	242	210	371	326
45-			15	11	47	35	97	74	167	128	257	199
50-			9	8	29	24	60	48	103	83	160	129
55-			6	5	17	18	34	34	60	57	93	88
60-			5	6	16	17	31	33	52	57	78	86
65-			8	6	9	18	19	34	32	56	49	93
70 Over			3	5	8	18	16	34	28	58	44	89
Totals			325	328	967	1001	1998	2025	3353	3397	5079	5140
			653		1968		4023		6750		10219	

Table 4.11

POPULATION IN PRIVATE HOUSING

AGE GROUP	1966 1st January M	1966 1st January F	1969 1st January M	1969 1st January F	1970 1st January M	1970 1st January F	1971 1st January M	1971 1st January F	1972 1st January M	1972 1st January F	1973 1st January M	1973 1st January F
Under 1	3	3	12	11	23	21	37	35	53	50	71	66
1	6	5	12	11	23	22	37	34	54	50	71	67
2	6	6	15	13	24	22	38	36	56	51	74	68
3	8	5	15	14	26	23	38	35	55	51	74	88
4	5	5	13	12	25	23	38	34	52	49	71	66
5	4	3	11	10	21	19	34	32	49	44	64	60
6	4	3	10	6	19	17	30	28	45	42	61	55
7	4	3	9	6	17	15	28	25	41	38	57	53
8	3	3	9	7	15	14	25	22	37	34	51	47
9	3	3	7	7	15	12	22	20	34	30	46	42
10	3	2	7	7	12	11	22	18	30	27	43	38
11	2	2	7	5	12	11	16	16	29	24	38	34
12	2	2	5	5	11	9	17	16	24	22	36	31
13	2	2	5	5	9	9	16	14	22	21	30	26
14	2	2	5	5	9	9	14	14	21	19	28	27
15	1	1	4	4	6	6	12	12	18	18	25	23
16	1	1	3	3	6	6	11	11	15	15	21	21
17	1	1	2	2	5	5	6	6	14	14	16	16
18	1	1	2	2	4	4	7	7	11	11	17	17
19	1	1	2	2	4	4	6	8	10	10	14	14
20 -	11	13	26	32	44	54	66	81	92	112	120	144
25 -	18	23	44	56	78	99	118	149	163	205	210	264
30 -	19	19	48	44	87	86	134	138	190	199	249	266
35 -	14	15	37	38	67	69	107	109	155	161	209	218
40 -	11	9	26	23	51	43	61	70	116	104	159	144
45 -	6	5	19	14	36	26	57	42	83	63	113	69
50 -	4	3	12	6	21	16	35	27	51	41	71	57
55 -	3	3	7	7	13	13	20	20	30	29	41	40
60 -	2	2	6	7	11	12	17	19	24	27	32	36
65 -	2	3	4	8	7	13	10	19	15	27	20	36
70 over	1	3	3	7	15	13	8	21	13	30	18	41
Totals	153	152	369	385	718	706	1111	1116	1603	1618	2152	2180
	305		774		1426		2229		3221		4332	

Figures for 1967 are included under Established Population

BIRTH and DEATH RATES

4.20 For ease of calculation the following assumptions are made: birth and death rates will remain constant over the period of the projection; the rate of natural increase will be 20 per 1,000 per annum for the population living in new town houses and in private houses and 10 per 1,000 per annum for the existing population.

MARRIAGE RATES

4.21 With the amount of building land for council houses at a premium during the period of the projection it is assumed that persons from the established population who would otherwise move into a new house in either Irvine or Kilwinning after marriage will move into a house in the new area and that 1 in 4 will move into a private house. The effect upon the home population in the established areas will be for the natural increase to be cancelled out by the movement of new households into the new area. After the initial period of immigration is over it is assumed that single people of marrying age in both private and new town houses will form a significant group which will, on marriage, make demands upon the housing stock of the town and that people will move into a house similar to the one which they had known previously; e. g. a person will move from a private house to a private house.

4. 22 Taking the marriage rate for Scotland in 1963 of 7. 6 per 1, 000 total population per annum it is assumed, for lack of any statistics on the subject, that the equivalent of 1 in every 2 persons getting married will require a house in the new town (for no increase in the population).

4. 23 The net effect of this in-built demand for houses will be to cut down on the number of immigrants who could otherwise be housed in the new town.

IMMIGRATION

4. 24 It is assumed that immigrant households will have the following number of persons:

New town and S. S. H. A. houses - 3. 2 persons
Private houses - 3. 0 "

These rates are assumed to be constant for the period of the projection.

EMIGRATION

4. 25 As with projection A it is assumed that those emigrating during the period of the projection will be replaced by people equal in age and numbers and that in consequence the projection need not account for turnover amongst houses.

HOUSE BUILDING RATES

4. 26 It is assumed for the purposes of this projection that there will be three rates of house building for both the private houses and the Development Corporation houses:

Table 4 .12

Rate	Completions per annum	
	Development Corporation Houses	Private Houses
Reduced Rate 1	750	250
Optimum Rate 2	1,000	330
Increased Rate 3	1,250	420

4. 27 The number of houses available to immigrants will, of course, depend upon the in-built demand for houses within the population living in the town.

4. 28 It is assumed that council house building will continue when and where redevelopment takes place within the established areas of Irvine and Kilwinning.

Table 4.13

REDUCED RATE OF HOUSE CONSTRUCTION

750 new town houses per annum
250 private houses per annum

Year (January 1st)	Established Population	Population in new town houses	Population in Private houses	Total Population of the New Town	Total Immigrant Population of the New Town
1973	33,425	12,847	4,332	50,804	16,583
1974	33,425	15,528	5,177	54,130	20,046
1975	33,425	18,263	6,039	57,727	23,599
1976	33,425	21,052	6,918	61,395	27,223
1977	33,425	23,897	7,814	65,136	30,918
1978	33,425	26,799	8,728	68,952	34,688
1979	33,425	29,759	9,861	72,845	38,534
1980	33,425	32,778	10,612	76,815	42,456
1981	33,425	35,858	11,582	80,865	46,457
1982	33,425	38,999	12,572	84,996	50,537
1983	33,425	42,203	13,581	89,209	54,899
1984	33,425	45,471	14,611	93,507	58,946
1985	33,425	48,804	15,661	97,890	63,275
1986	33,425	52,204	16,732	102,361	67,692
1987	33,425	55,672	17,825	106,922	72,197
1988	33,425	59,209	18,940	111,574	78,793
1989	33,425	62,817	20,077	116,319	81,480
1990	33,425	66,497	21,237	121,159	88,262

Table 4.14

OPTIMUM RATE OF HOUSE CONSTRUCTION

1,000 new town houses
330 private houses per annum

Year (January 1st)	Established Population	Population in new town houses	Population in Private houses	Total Population of the New Town	Total Immigrant Population of the New Town
1973	33,425	13,655	4,332	51,412	17,361
1974	33,425	17,160	5,418	56,003	21,896
1975	33,425	20,735	6,525	80,685	26,521
1976	33,425	24,382	7,655	65,462	31,240
1977	33,425	28,102	8,807	70,334	36,053
1978	33,425	31,896	9,982	75,303	40,962
1979	33,425	35,766	11,181	80,372	45,969
1980	33,425	39,713	12,404	85,542	51,077
1981	33,425	43,739	13,851	90,815	56,286
1982	33,425	47,846	14,923	96,194	61,559
1983	33,425	52,035	16,220	101,680	67,019
1984	33,425	58,310	17,543	107,278	72,549
1985	33,425	60,668	18,893	112,986	78,188
1986	33,425	65,113	20,270	118,808	83,939
1987	33,425	69,647	21,674	124,746	89,805
1988	33,425	74,272	23,106	130,803	95,788
1989	33,425	78,989	24,567	136,981	101,891
1990	33,425	83,801	26,057	143,283	108,117

Table 4.15

INCREASED RATE OF HOUSE CONSTRUCTION

1,250 new town houses per annum
420 private houses per annum

Year (January 1st)	Established Population	Population in new town houses	Population in Private Houses	Total Population of the new town	Total Immigrant Population of the new town
1973	33,425	14,463	4,332	52,220	18,160
1974	33,425	18,792	5,892	57,909	23,779
1975	33,425	23,208	7,079	63,712	29,512
1976	33,425	27,712	8,494	69,631	35,359
1977	33,425	32,306	9,937	75,668	41,323
1978	33,425	36,992	11,409	81,826	47,406
1979	33,425	41,772	12,910	88,107	53,610
1980	33,425	46,847	14,441	94,513	59,938
1981	33,425	51,620	16,003	101,048	66,394
1982	33,425	56,692	17,596	107,713	72,979
1983	33,425	61,866	19,221	114,512	79,696
1984	33,425	67,143	20,878	121,446	88,545
1985	33,425	72,526	22,569	128,520	93,533
1986	33,425	78,017	24,293	135,735	100,660
1987	33,425	83,617	26,052	143,094	107,931
1988	33,425	89,329	27,846	150,600	116,335
1989	33,425	95,156	29,677	158,258	12,291
1990	33,425	101,099	31,544	166,068	130,625

REFERENCES

i. "Methods for Population Projections by Sex and Age"
United Nations 1956 ST/50A/Series A
Population Studies, No. 25 Sales No. 1956 x 1113

ii. Census of Population 1961 Scotland
Ayr County Volume

iii. Census of Population 1961 England and Wales

iv. Annual Report of the Registrar General for Scotland 1963

v. "Urban Land Use Planning" F. Stuart Chapin Jnr.
University of Illinois Press, Urbana, 1963.

APPENDIX 5
Shopping

A. RETAIL TRADING

5.1 The method of estimating the amount of retail trading space required in the new town follows closely that first used in the Cumbernauld Central Area Report Part 1. The method was later developed and employed in the Skelmersdale New Town Planning Proposals and it is upon the latter that the method used here - with further additions and refinements - is based:

i) From information contained in the Census of Distribution for 1961, the range of the amount of money likely to be spent in shops in the new town at various population levels can be estimated

ii) From information contained in the Census of Distribution for 1961, the amount of money likely to be spent in local and district shops can be estimated

iii) By deducting ii) from i) above the range of the amount of money likely to be spent in shops in the town centre can be estimated

iv) By employing suitable conversion factors the amount spent per annum can be converted into gross retail floor space requirements.

5.2 The values for both the amount of money spent in shops and also the conversion factors all relate to 1961. In the calculations it has been assumed that growth in sales will be matched approximately by an increase in retail efficiency. The evidence available indicates that this assumption may not entirely be justified but it is considered that it will not cause serious errors.

5.3 Using the results contained in the Skelmersdale Report of the 317 town regression analysis for all towns in Britain outside Greater London with populations between 20,000 and 100,000 in 1961 it is possible to estimate the possible range of retail sales for various trade categories in the new town, as follows:

Table 5.1a

CALCULATED VALUE (adjusted for non-disclosure error to the nearest £'000)

Population	Total Sales	Grocers & Provision dealers	Other Food retailers	Confectioners, tobacconist &c	Clothing & footwear	Household Goods	Other Non-food retailers	General Stores
	£000's	£000's	£000's	£000's	£000 s	£000's	£000's	£000's
30,000	5,258	1,537	1,086	438	733	639	391	434
40,000	7,456	1,990	1,519	610	1,150	931	544	712
50,000	9,895	2,476	1,952	783	1,569	1,225	718	972
60,000	11,931	2,982	2,385	955	1,977	1,516	892	1,242
70,000	14,171	3,437	2,819	1,127	2,405	1,810	1,070	1,503
80,000	16,406	3,914	3,252	1,299	2,822	2,104	1,248	1,787
90,000	18,846	4,389	3,884	1,471	3,243	2,397	1,428	2,034
100,000	20,871	4,842	4,118	1,644	3,855	2,692	1,614	2,308

Table 5.1b

UPPER LIMIT SALES (adjusted for non-disclosure error to the nearest £'000)

Population	Total Sales	Grocers & Provision dealers	Other Food retailers	Confectioners, tobacconist &c	Clothing & footwear	Household Goods	Other Non-food retailers	General Stores
	£000's	£000's	£000's	£000's	£000's	£000's	£000's	£000's
30,000	10,994	2,315	2,223	848	2,337	1,881	478	1,114
40,000	13,228	2,790	2,655	1,020	2,750	1,973	659	1,381
50,000	15,466	3,266	3,069	1,194	3,170	2,266	638	1,645
60,000	17,802	3,742	3,523	1,365	3,589	2,581	1,106	1,917
70,000	19,962	4,219	3,960	1,535	4,011	2,856	1,199	2,182
80,000	22,217	4,697	4,398	1,712	4,433	3,152	1,374	2,453
90,000	24,478	5,175	4,634	1,856	4,860	3,449	1,586	2,738
100,000	26,734	5,672	5,272	2,060	5,289	3,749	1,716	2,976

Table 5.1c

LOWER LIMIT SALES (adjusted for non-disclosure error to the nearest £'000)

Population	Total Sales	Grocers & Provision dealers	Other Food retailers	Confectioners, tobacconist &c	Clothing & footwear	Household Goods	Other Non-food retailers	General Stores
	£000's	£000's	£000's	£000's	£000's	£000's	£000's	£000's
70,000	8,380	2,655	1,676	718	799	768	794	974
80,000	10,630	3,130	2,106	887	1,212	1,057	986	1,252
90,000	12,870	3,602	2,534	1,058	1,825	1,345	1,179	1,527
100,000	15,087	4,064	2,961	1,226	2,027	1,634	1,372	1,803

5.4 As the total population of Irvine new town might eventually exceed 100,000 it is necessary to carry out an additional regression analysis of the total retail sales in the 36 towns in Britain outside Greater London whose populations in 1961 lay between 100,000 and 200,000. The towns are as follows:

Town	* Population 1981	* Total Retail Sales 1961 Corrected for non-response
		£000's
Luton	131,505	27,371
Reading	119,870	36,265
Birkenhead	141,683	24,683
Stockport	142,469	25,025
Wallasey	103,213	14,157
Derby	132,325	38,170
Gateshead	103,232	15,583
South Shields	109,533	18,131
Blackburn	106,114	20,882
Oldham	115,426	21,106
Preston	113,208	28,595
St. Helens	108,348	18,858
Norwich	119,904	33,600
Northhampton	105,381	26,199
Oxford	106,124	31,665
Walsall	117,836	26,577
Ipswich	117,325	27,955
Huddersfield	130,302	26,546
York	104,468	28,355
Rhondda	100,314	12,223
Newport	108,107	24,652
Blackpool	152,133	39,678
Bolton	160,887	32,160
Salford	154,963	20,731
Wolverhampton	150,385	42,560
Brighton	162,757	41,686
Middlesbrough	157,308	30,906
Swansea	166,740	33,419
Aberdeen	185,379	42,484
Dundee	182,959	35,571
Sunderland	189,629	36,642
Bournemouth	153,965	45,583
Hornchurch	128,127	15,331
Romford	114,579	27,185
Southend	164,976	36,909
Thurrock	114,302	15,947

* Census of Distribution 1961

5.5 The results of the regression in analysis for the 36 towns with 100,000 to 200,000 population are as follows:

Table 5.2

CALCULATED VALUE) SALES FOR TOWNS WITH
UPPER LIMIT) 100,000 to 200,000
LOWER LIMIT) POPULATION £000's

Population	Calculated Value	Upper Limit	Lower Limit
110,000	23,414	35,878	10,950
120,000	25,614	38,078	13,150
130,000	27,814	40,278	15,350
140,000	30,014	42,478	17,550
150,000	32,214	44,678	19,750
160,000	34,414	46,878	21,950
170,000	38,614	49,078	24,150
180,000	38,814	51,278	26,350
190,000	41,014	53,478	28,550
200,000	43,214	55,678	30,750

5.6 In both the 317 and the 36 town analyses the calculated value represents the regression line. The upper and lower limit sales are within 95% confidence limits. Because of a lower coefficient of correlation the upper and lower limits of the 36 town analysis are more extreme than those of the 317 town analysis. This factor explains the apparent extreme case shown in Table 5.4c of a town of 110,000 locking any central area.

5.7 In the shopping policy for the new town it is planned to provide the residents of the town with an amount of local and district shopping comparable to that in towns of similar size in Scotland. The degree of this provision in existing towns can be judged from the amount of money spent per head of population in shops outside the central areas. The towns used in this analysis were:

Town	Population 1961 . (Census of Distribution)
Greenock	74,578
Kirkcaldy	52,371
Motherwell & Wishaw	72,799
Coatbridge	53,946
Paisley	95,753

5.8 Although these towns have widely differing central area characteristics, a clear indication can be obtained of the amount of money which is likely to be spent in local and district shops, as follows:

Table 5.3

SALES IN LOCAL AND DISTRICT SHOPS PER HEAD OF POPULATION PER ANNUM

Trade Category	Minimum £'s/capita	Average £'s/capita	Maximum £'s/capita
Grocers & Provision dealers	29.6	38.6	44.1
Other food retailers	17.8	25.5	38.1
Confectioners, tobacconists, Newsagents	9.6	12.4	14.6
Clothing & footwear shops	2.7	6.0	15.8
Household goods shops	2.2	4.6	8.6
Other non-food retailers	2.7	3.7	4.3
General stores	5.5	8.7	12.1
Total retail trade	70.1	99.5	135.6

5.9 It is anticipated that this pattern of spending will be repeated at Irvine and that the actual amount spent per head of population in local and district shops will lie somewhere between the minima and maxima given above.

5.10 For the purposes of estimating the amount of retail trade done in the central area it is necessary to subtract the amount likely to be spent in local and district shops from the estimated total retail sales given above.

5.11 Because of the difficulty of forecasting the rate of construction of town centre and linear development area housing, the figures given in Tables 5.4a, b and c below exclude the amount spent in the town centre on local and district shopping by the walk-in population. Table 11a gives these details for given levels of town centre and linear development area population. In the calculation given below it is assumed that the immigrant population will spend at the average rate for the five Scottish towns whilst the established population will spend at the maximum rate in local and district shops.

Table 5.4a

£000's

AVERAGE RETAIL SALES IN THE CENTRAL AREA

Total Population of the New Town	Total Sales	Grocers & Provision dealers	Other Food retailers	Confectioners tobacconists &c	Clothing & footwear	Household Goods	Other Non-Food retailers	General Stores
30,000	1,171	217	9	1	265	383	282	73
40,000	2,414	284	187	49	622	630	378	264
50,000	3,658	384	365	98	981	878	515	437
60,000	4,899	484	543	146	1,229	1,125	652	620
70,000	6,144	573	722	194	1,697	1,371	795	794
80,000	7,384	664	900	242	2,054	1,619	934	971
90,000	8,629	753	1,077	290	2,415	1,866	1,077	1,151
100,000	9,859	820	1,256	339	2,787	2,115	1,226	1,336
110,000	11,408							
120,000	12,613							
130,000	13,818							
140,000	15,023							
150,000	16,228							
160,000	17,433							
170,000	18,638							
180,000	19,843							
190,000	21,048							
200,000	22,253							

Table 5.4b

£000's

MAXIMUM SALES IN THE CENTRAL AREA

Total Population of the New Town	Total Sales	Grocers & Provision dealers	Other Food retailers	Confectioners tobacconists &c	Clothing & footwear	Household Goods	Other Non-Food retailers	General Stores
30,000	6,947	995	1,146	411	1,869	1,425	347	753
40,000	8,188	1,084	1,323	459	2,222	1,672	493	933
60,000	9,430	1,174	1,502	509	2,582	1,919	633	1,110
60,000	10,681	1,284	1,681	556	2,941	2,188	866	1,295
70,000	11,935	1,355	1,883	602	3,303	2,417	922	1,473
80,000	13,195	1,447	2,044	655	3,685	2,687	1,080	1,657
90,000	14,461	1,539	2,227	675	4,032	2,918	1,215	1,855
100,000	15,722	1,650	2,410	755	4,401	3,172	1,328	2,006
110,000	23,872							
120,000	25,077							
130,000	26,282							
140,000	27,487							
150,000	28,692							
160,000	29,897							
170,000	31,102							
180,000	32,307							
190,000	33,512							
200,000	34,717							

Table 5.4c

MINIMUM SALES IN THE CENTRAL AREA £000's

Total Population of the New Town	Total Sales	Grocers & Provision dealers	Other Food retailers	Confectioners tobacconists &c	Clothing & footwear	Household Goods	Other Non-food retailers	General Stores
70,000	1,200	-	-	-	91	327	517	265
80,000	2,144	-	-	-	444	572	672	458
90,000	3,083	-	-	-	797	814	828	644
100,000	4,154	42	99	-	1,139	1,057	984	833
110,000	0							
120,000	149							
130,000	1,354							
140,000	2,559							
150,000	3,764							
160,000	4,969							
170,000	6,174							
180,000	7,379							
190,000	8,584							
200,000	9,789							

5.12 The sales figures for the town can be converted into gross retail floor space by the use of the "efficient floor space conversion factors" contained in the Skelmersdale Planning Proposals. These are as follows:

Trade		Conversion Factor
Grocers and Provision dealers		£32 per sq. ft. p.a.
Other Food Retailers		£30 " " " " "
Confectioners, tobacconists, etc.		£26 " " " " "
Clothing and Footwear		£25 " " " " "
Household Goods		£20 " " " " "
Other Non-Food Retailers		£20 " " " " "
General Stores		£30 " " " " "
Total Retail Trade	Approx.	£26.6" " " " "

RETAIL FLOOR SPACE for the NEW TOWN

5.13 By employing these conversion factors the total amount of gross retail floor space required for the new town is shown in Tables 5.5a to 5.5c inclusive:

Table 5 . 5a

RETAIL AREAS FOR THE NEW TOWN - CALCULATED VALUE '000 SQ, FT, GROSS

Population of New Town	Total	Grocers & Provision dealers	Other food retailers	Confectioners tobacconists &c	Clothing & foot wear	Household Goods	Other Non-food retailers	General Stores
30,000	196	48	36	17	29	32	20	14
40,000	280	62	51	23	46	47	27	24
50,000	364	77	65	30	63	61	36	32
60,000	450	93	79	37	79	76	45	41
70,000	535	107	94	43	96	91	54	50
80,000	619	122	108	50	113	105	82	59
90,000	706	137	123	57	130	120	71	68
100,000	790	151	137	63	146	135	81	77
110,000	880							
120,000	963							
130,000	1,046							
140,000	1,128							
150,000	1,121							
160,000	1,294							
170,000	1,378							
180,000	1,459							
190,000	1,542							
200,000	1,642							

Table 5 . 5b

RETAIL AREAS FOR THE NEW TOWN - UPPER LIMIT '000 SQ, FT, GROSS

Population of New Town	Total Trade	Grocers & Provision dealers	Other Food retailers	Confectioners tobacconists &c	Clothing & footwear	Household Goods	Other Non-food retailers	General Stores
30,000	417	72	74	33	93	84	24	37
40,000	502	87	88	39	110	99	33	46
50,000	588	102	103	46	127	113	42	55
60,000	877	117	117	52	144	128	55	64
70,000	759	132	132	59	160	143	60	73
80,000	846	147	147	66	177	158	69	82
90,000	929	162	181	71	194	172	78	91
100,000	1,016	177	176	79	212	187	86	99
110,000	1,349							
120,000	1,431							
130,000	1,514							
140,000	1,597							
150,000	1,679							
160,000	1,782							
170,000	1,845							
180,000	1,928							
190,000	2,010							
200,000	2,093							

Table 5.5c

RETAIL AREAS FOR THE NEW TOWN - LOWER LIMIT
'000 SQ.FT. GROSS

Population of the New Town	Total Trade	Grocers & Provision dealers	Other Food retailers	Confectioners tobacconists &c	Clothing & footwear	Household Goods	Other Non-food retailers	General Stores
70,000	309	83	56	26	32	38	40	32
80,000	394	98	70	34	46	53	49	42
90,000	480	113	84	41	65	87	59	51
100,000	565	127	99	47	81	62	69	60
110,000	412							
120,000	494							
130,000	577							
140,000	660							
150,000	742							
160,000	625							
170,000	908							
180,000	990							
190,000	1,073							
200,000	1,156							

RETAIL FLOOR SPACE for the CENTRAL AREA

5.14 Similarly the retail areas for the central area are given in Tables 5.6a to 5.6c inclusive. These figures exclude the gross area of floor space required by the walk-in population for their district and local shopping requirements (see Table 5.12a for these details).

Table 5.6a

RETAIL AREAS FOR THE CENTRAL AREA - AVERAGE
'000 SQ.FT. GROSS

Population of the New Town	Total Trade	Grocers & Provision dealers	Other Food retailers	Confectioners tobacconists &c	Clothing & foot wear	Household Goods	Other Non-food retailers	General Stores
30,000	52	7	-	-	11	18	13	2
40,000	102	8	6	2	25	32	19	9
50,000	153	12	13	4	39	44	26	15
60,000	202	15	16	6	53	56	33	21
70,000	252	16	24	7	66	69	40	26
80,000	302	21	30	9	62	81	47	32
90,000	353	24	36	11	97	93	54	38
100,000	404	26	42	13	111	106	61	45
110,000	429							
120,000	474							
130,000	519							
140,000	565							
150,000	610							
160,000	655							
170,000	700							
160,000	746							
190,000	791							
200,000	636							

Table 5.6b

RETAIL AREAS FOR THE CENTRAL AREA - MAXIMUM
'000 SQ.FT. GROSS

Population of the New Town	Total Trade	Grocers & Provision dealers	Other Food retailers	Confectioners tobacconists &c	Clothing & foot wear	Household Goods	Other Non-food retailers	General Stores
30,000	273	31	38	16	75	71	17	25
40,000	325	34	44	18	89	84	25	31
50,000	375	37	50	20	103	96	32	37
60,000	429	40	56	21	118	108	43	43
70,000	475	42	62	23	132	121	46	49
80,000	528	45	68	25	147	133	53	55
90,000	578	48	74	26	161	146	61	62
100,000	629	52	80	29	176	159	66	87
110,000	897							
120,000	943							
130,000	988							
140,000	1,033							
150,000	1,078							
160,000	1,123							
170,000	1,169							
180,000	1,214							
190,000	1,260							
200,000	1,305							

Table 5.6c

RETAIL AREAS FOR THE CENTRAL AREA - MINIMUM
'000 SQ.FT. GROSS

Population of the New Town	Total Trade	Grocers & Provision dealers	Other Food retailers	Confectioners tobacconists &c	Clothing & foot wear	Household Goods	Other Non-food retailers	General Stores
70,000	55	-	-	-	4	16	26	9
80,000	98	-	-	-	18	29	34	17
90,000	135	-	-	-	32	41	41	21
100,000	180	1	3	-	46	53	49	28
110,000	-							
120,000	6							
130,000	51							
140,000	96							
150,000	141							
160,000	187							
170,000	232							
180,000	277							
190,000	323							
200,000	368							

RETAIL FLOOR SPACE in DISTRICT CENTRES and LOCAL SHOPS

5.15 From the sales per capita figures given in Table 5. 3 it is possible by use of the conversion factors to calculate the amount of retail floor space required in the district centres and local shops of the new town.

Table 5.7

RETAIL FLOOR AREAS IN LOCAL AND DISTRICT SHOPS PER 1,000 POPULATION (SQ.FT, GROSS)

Trade Category	Minimum	Average	Maximum
Grocers & Provision dealers	930	1,210	1,380
Other food retailers	590	850	1,200
Confectioners, tobacconists, &c	370	480	560
Clothing and footwear shops	110	240	630
Household goods shops	110	230	430
Other non-food retailers	140	190	220
General Stores	180	290	400
TOTAL TRADE	2,430	3,490	4,820

5.16 It is planned to provide local shops at the rate of one per 400 families throughout the new town. Each shop of this category will, on average, occupy some 1,000 sq. ft.

5.17 The amount of floor space required for individual district centres in the new town is then calculated by deducting the floor space of local shops from the total retail floor space requirements of the district.

B. SERVICE TRADING

5.18 Following the procedure adopted for estimating the retail trading floor space requirements for the new town, the method of estimating the amount of service trade provision follows that given in the Skelmersdale New Town Planning Proposals. In these calculations it was assumed that the amount spent per capita on service trades within the town would equal the amount spent nationally per head. It was assumed that any imported service trade spending in the town would be balanced by an equal amount leaving the town. (see Table 5.8, page 181,and Table 5.9, page 183-4).

5.19 As with the retail trades the above sales may be converted into gross service trade floor space using the conversion factors given in the Skelmersdale Report. These are as follows

Table 5.10

CONVERSION FACTOR

		£ turnover/sq. ft. gross floor area (1961 value)
(a)	Hairdressers	25
(b)	Boot and Shoe Repairers	25
(c)	Electricity and Gas Showrooms	25
(d)	Catering	25
(e)	Launderettes and Dry Cleaners	25
(f)	Motor Vehicle Showrooms	30
(g)	Petrol Filling Stations	20
(h)	Motor Vehicle Service Stations	12

5.20 The estimated floor space requirements for service trading in the new town using the above conversion factors are contained in the following tables (Table 5, 11a, page 185-6)

5.21 Assuming that half the total service trading requirements will be met in the central area, Table 5, 11b shows the total amount of floor space required there.

Table 5.8

SERVICE TRADE TURNOVER

Service Trade	Column A G.B. Turnover £'s 1961	£'s per capita Column 6 G.B. Turnover/cap £'s 1961	Regions 1961 from		to	£'s per capita 1961 from		to	Indices (G.B. - 100) 1961 from		to
1. Showrooms	104,174,000	2.03	Northern	-	London & S.E.	1.48	-	2.56	73	-	127
(a) Electricity	55,029,000	1.07	N/Midlands	-	South West	0.64	-	1.59	60	-	149
(b) Gas	49,145,000	0.96	Scotland	-	London & S.E.	0.51	-	1.45	53	-	151
2. Catering Cafes, restaurants, etc. Fish & Chip Shops	352,420,000	6.35	Scotland	-	London & S.E.	4.69	-	8.70	77	-	137
3. Launderettes and Dry Cleaners *	45,320,000	0.88	Scotland	-	London & S.E.	0.64	-	1.29	73	-	147
(a) Launderettes	5,787,000	0.11	Scotland	-	London & S.E.	0.06	-	0.16	73	-	147
(b) Dry Cleaners	39,533,000	0.77	Scotland	-	London & S.E.	0.56	-	1.13	73	-	147
4. Motor Trade ∅	2,921,706,000	56.32	Scotland	-	N. Midlands	16.76	-	36.61	65	-	121
(a) Motor Sales	1,672,256,000	32.24	Scotland	-	N. Midlands	16.76	-	41.27	52	-	126
(b) Service	579,026,000	11.16	Scotland	-	South & SW	6.48	-	14.06	76	-	126
(c) Petrol sales	560,733,000	10.61	Scotland	-	South & SW	8.22	-	13.62	76	-	126
(d) Misc. sales	109,691,000	2.11	Scotland	-	N. Midlands	1.10	-	2.70	52	-	126
5. Hairdressers	97,267,000	1.90	Scotland	-	London & S.E.	1.32	-	2.56	69	-	135
6. Boot and Shoe Repairers	25,436,000	0.50	Eastern	-	London & S.E.	0.37	-	0.65	64	-	130

* Excludes Laundries

∅ 1962 data

NOTES ON TABLE 5.8

Service Trade Currency of Information	Cols.	Source of Information	Comments	Basis of Indices
1. Showrooms 1961		C.O.D. 1961		C.O.D. 1961
2. Catering 1961	A B C & D	A.A.S. C.O.D. Popn. 1961 F.I.E.S. 1962	1960 x 1961 index Average expenditure per household 1961-1962 as basis of comparison to arrive at indices	'Fish & Chips' and meals 'out' approx. = to 2
3. Launderettes and Dry Cleaners 1961	A B C & D	C.O.D. 1961 F.I.E.S. 1962	Laundries omitted Average expenditure per household 1961-1962 as the basis of comparison to arrive at indices	Laundry Cleaning Dyeing approx. = to 3. Indices for sub groups assumed to be the same as figure for hairdressers
4. Motor Trade	A B	B.C.T.J. 17.4.61 A.A.S. R.G's	Wholesalers of motor accessories and spares	Net Purchases of Motor Vehicles approx. = to 4(a) + 4(d)
	C & D	mid-yr. 1962 pop F.I.E.S. 1962	omitted Misc. Sales index = Motor Sales index	Maintenance/running of motor vehicles approx. = to 4(b) + 4(c)

Abbreviations:
C.O.D. - Census of Distribution
A.A.S. - Annual Abstract of Statistics
F.I.E.S. - Family Income of Expenditure Survey
R.G. - Registrar-General
B.O.T.J. - Board of Trade Journal

Table 5 , 9

SERVICE TRADES: TURNOVER IN ALL ESTABLISHMENTS £'000's This table shows the average sales together with the upper and lower limit sales (in brackets) for Irvine New Town

POPULATION	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000
Hairdressers	38 (18-59)	-	83 (57-123)	-	107 (92-131)	-	156 (130-178)	175 (130-240)	200 (133-264)
Boot & Shoe Repairers	7 (7)	-	22 (18-26)	-	34 (19-46)	-	92 (32-178)	92 (32-176)	57 ø (39-87)
Showrooms	41 (30-52)	61 (44-77)	81 (59-103)	102 (74-129)	122 (89-155)	142 (104-181)	182 (118-206)	183 (133-232)	203 (148-258)
Catering & Cafes, Restaurants, Chip Shops	127 (98-174)	191 (147-261)	254 (196-348)	318 (245-435)	381 (293-522)	445 (342-609)	508 (391-696)	572 (440-783)	635 (489-870)
Launderettes and Dry Cleaners	18 (13-25)	26 (19-39)	35 (26-52)	44 (32-65)	53 (38-77)	62 (45-90)	70 (51-103)	79 (58-116)	88 (64-129)
Motor Vehicle Sales *	887 (357-879)	103 (536-1319)	1,374 (714-1759)	1,718 (893-2199)	2,062 (1072-2628)	2,406 (1150-3083)	2,748 (1428-3518)	3,092 (1806-3953)	3,438 (1786-4398)
Petrol Sales	216 (164-272)	324 (247-409)	432 (329-545)	541 (411-681)	648 (494-818)	756 (578-954)	884 (858-1090)	972 (740-1226)	1,082 (822-1382)
Motor Vehicle Service	223 (170-281)	335 (254-422)	446 (339-562)	558 (424-703)	870 (508-844)	782 (583-985)	892 (678-1124)	1,004 (763-1265)	1,116 (848-1406)
Total Service Trades	1,357 (850-1742)	-	2,727 (1738-3518)	-	4,077 (2605-5221)	-	5,492 (3486-7091)	6,169 (3902-7991)	6,817 (4349-8754)

cont. on page 184

* includes miscellaneous sales

ø The analysis showed that the 1961 turnover in the Boot and Shoe Repairers Group for towns of 100,000 population was lower than for the towns of 80,000 population. This was because the towns of 100,000 population in the sample tended to be more closely linked to their parent cities than towns of 80,000 population.

Table 5.9

cont. from page 183

POPULATION	110,000	120,000	130,000	140,000	150,000	160,000	170,000	180,000	190,000	200,000
Hairdressers	209 (145-282)	228 (158-307)	247 (172-333)	266 (185-358)	285 (198-384)	304 (211-410)	323 (224-435)	342 (238-461)	361 (251-486)	380 (264-512)
Boot and Shoe Repairers	55 (41-72)	60 (44-78)	65 (48-85)	70 (52-91)	75 (56-98)	80 (59-104)	85 (53-111)	90 (07-117)	95 (70-124)	100 (74-130)
Showrooms	223 (163-284)	244 (178-310)	284 (192-335)	284 (207-361)	305 (222-387)	325 (237-413)	345 (252-439)	385 (255-464)	386 (281-490)	406 (296-516)
Catering, Cafes, Restaurants and Chip Shops	599 (538-957)	762 (587-1044)	826 (636-1131)	889 (685-1220)	953 (734-1305)	1,018 (782-1392)	1,079 (831-1479)	1,143 (880-1586)	1,205 (929-1653)	1,270 (978-1740)
Launderettes and Dry Cleaners	97 (70-142)	106 (77-155)	114 (83-168)	123 (90-181)	132 (96-194)	141 (102-206)	150 (109-219)	158 (115-232)	167 (122-245)	176 (128-258)
Motor Vehicle Sales) Petrol Sales) Motor Vehicle) Service)	8,195 (4027-7498)	6,758 (4393-8179)	7,322 (4759-8861)	7,885 (5125-9542)	8,448 (5492-10224)	9,011 (5858-10906)	9,574 (6224-11587)	10,138 (6589-12269)	10,701 (5956-12950)	11,284 (7332-13532)
Total Service Trades	7,478 (4984-9235)	8,158 (5437-10073)	8,838 (5890-10913)	9,517 (6344-11753)	10,198 (6798-12592)	10,877 (7249-13431)	11,556 (7451-14270)	12,236 (8155-15109)	12,916 (8609-15948)	13,596 (9072-15788)

Table 5.11a

000's SQ.FT.

SERVICE TRADING - GROSS SERVICE TRADE FLOOR SPACE REQUIRED IN IRVINE NEW TOWN

POPULATION	20,000	30,000	40,000	50,000	60,000	70,000	80,000	90,000	100,000
Hairdressers	2 (1-2)	-	3 (2-5)	-	4 (4-5)	-	8 (5-7)	7 (5-9)	8 (5-11)
Boot and Shoe Repairers	-	-	1 (1)	-	1 (1-2)	-	4 (1-7)	4 (1-7)	2 * (2-3)
Showrooms	2 (1-2)	2 (2-3)	3 (2-4)	4 (3-5)	5 (4-8)	8 (4-7)	6 (5-8)	7 (5-9)	8 (6-10)
Catering, and Cafes, Restaurants and Chip Shops	5 (4-7)	7 (6-10)	10 (8-14)	13 (10-17)	15 (12-21)	18 (14-24)	20 (18-28)	23 (18-31)	25 (20-35)
Launderettes and Dry Cleaners	1 (1)	1 (1-2)	1 (1-2)	2 (1-3)	2 (2-3)	2 (2-4)	3 (2-4)	3 (2-5)	4 (3-5)
Motor Vehicle Sales	23 (12-29)	34 (18-44)	46 (24-59)	57 (30-73)	68 (36-88)	79 (42-103)	92 (48-118)	103 (54-133)	114 (60-146)
Petrol Sales	11 (8-14)	15 (12-20)	22 (16-27)	27 (21-34)	32 (24-40)	37 (28-47)	44 (32-54)	49 (36-61	54 (42-88)
Motor Vehicle Service	19 (14-23)	28 (21-35)	37 (28-47)	46 (35-59)	56 (42-70)	66 (49-82)	74 (58-94)	84 (63-106)	92 (70-118)
Total Service Trades	63 (41-78)	-	123 (81-158)	-	183 (125-235)	-	249 (185-320)	280 (184-381)	307 (208-396)

cont. on page 188

* The anlaysis showed that the 1961 turnover in the Boot and Shoe Repairers group for towns of 100,000 population was lower than for towns of 80,000 population. This was because the towns of 100,000 population in the sample tended to be more closely linked to their parent cities than towns of 80,000 population.

Table 5.11 a

cont. from page 185

POPULATION	110,000	120,000	130,000	140,000	150,000	160,000	170,000	180,000	190,000	200,000
Hairdressers	8 (8-11)	9 (6-12)	10 (7-13)	11 (7-14)	11 (8-15)	12 (8-16)	13 (9-17)	14 (10-18)	14 (10-19)	15 (11-20)
Boot and Shoe Repairers	2 (2-3)	2 (2-3)	3 (2-3)	3 (2-4)	3 (2-4)	3 (2-4)	3 (3-4)	4 (3-5)	4 (3-5)	4 (3-5)
Showrooms	9 (7-11)	10 (7-12)	11 (8-13)	11 (8-14)	12 (9-15)	13 (9-17)	14 (10-18)	15 (11-19)	15 (11-20)	16 (12-21)
Catering and Cafes, Restaurants and Chip Shops	28 (22-38)	30 (23-42)	33 (25-45)	36 (27-49)	38 (29-52)	41 (31-56)	43 (33-59)	46 (35-63)	48 (37-66)	51 (39-70)
Launderettes and Dry Cleaners	4 (3-6)	4 (2-8)	5 (3-7)	5 (4-7)	5 (4-8)	8 (4-8)	6 (4-9)	6 (5-9)	7 (5-10)	7 (5-10)
Motor Vehicle Sales Petrol Sales Motor Vehicle Service	289 (188-350)	316 (205-382)	342 (222-414)	368 (239-446)	395 (258-477)	421 (274-509)	447 (291-541)	473 (308-573)	500 (325-605)	526 (342-637)
Total Service Trades	340 (228-419)	371 (245-457)	404 (287-495)	434 (287-534)	464 (308-571)	496 (328-610	526 (340-648)	558 (372-687)	588 (391-725)	619 (412-783)

Table 5.11b

SERVICE TRADING - GROSS SERVICE TRADE FLOOR SPACE REQUIRED IN THE CENTRAL AREA OF IRVINE NEW TOWN 00's SQ.FT.

Population of the New Town	Minimum	Average	Maximum
30,000	-	-	-
40,000	40	64	79
50,000	-	-	-
60,000	62	92	117
70,000	-	-	-
80,000	82	125	160
90,000	91	140	181
100,000	103	154	197
110 000	114	170	210
120,000	123	181	229
130,000	134	202	248
140,000	144	216	267
150,000	154	232	286
160,000	164	298	305
170,000	175	263	324
180,000	186	279	344
190,000	196	294	363
200,000	206	310	382

C. IRVINE and KILWINNING BURGHS

5.22 In view of the future demands which are going to be met by the shops in the centres of the existing townships it is necessary to provide an estimate of the amount of shopping floor space for retail and service trades which will be required after the first five years of growth within the new town. As the future status of these centres will be that of district centres it is a relatively simple calculation to arrive at the amount of trade (at 1961 values) which will be transacted there.

5.23 Because of the likely continued attraction to the established population it is assumed that they will spend the maximum amount per head in the district as a whole:

£135.6 on retail shopping
£ 7.9 on service trading (excluding motor trades)
Total £143.5

5.24 For the immigrant population it is assumed that they will spend the average amount per head in the district as a whole:

£ 99.5 on retail shopping
£ 5.8 on service trading (excluding motor trades)
Total £105.3

5.25 From 1st January, 1972 onwards the established population of Irvine and Kilwinning small burghs is estimated to be:

Irvine	21,390
Kilwinning	8,020

5.26 Hence the total amount likely to be spent in the district by the established population:

Irvine 21,390 x £143.5 = £3,069,465
Kilwinning 8,020 x £143.5 = £1,150,870

5.27 From our preliminary estimates of the immigrant population capacity of the two Burghs it would appear that towards the end of 1972 the capacity will have been reached. The respective capacities are:

Irvine 8,800 x £105.3 = £926,640
Kilwinning 8,000 x £105.3 = £842,400

5.28 Using an overall turnover conversion factor of £25 per annum per sq. ft. (1961 values) the following amounts of retail and service trade floor space will be required:

Irvine $\frac{\pounds 3,996,105}{25}$ = 159,840 sq. ft. gross

Kilwinning $\frac{\pounds 1,993,270}{25}$ = 79,730 sq. ft. gross

5.29 For the next stage of the calculation it is assumed that the existing floor space in the two towns will operate at the same level of efficiency as new floor space (i.e. £25 per sq. ft. per annum) because of the pressure of sales during the early years. From the floor space figures supplied by the Ayr County Planning Department with suitable up-dating it is estimated that at the present time:

(i) Irvine has a total of 169,275 sq. ft. gross of retail and service trade floor space of which 139,555 sq. ft. is in Irvine centre (excluding motor trades)

It is assumed that the floor space outside the centre will remain at 29,720 sq. ft. and will serve the established population. Allowance is made for the immigrants at a rate of 750 sq. ft of local shopping floor space per 1,000 population

i.e. 8,800 x 750 sq. ft. = 6,600 sq. ft.

The total local shopping floor space, therefore, amounts to 36,320 sq. ft.; this can be deducted from the total estimated requirements for Irvine centre as follows:

159,840 sq. ft. - 36,320 sq. ft. = 123,520 sq. ft.

If this is then compared with the actual amount of shopping floor space it is seen that Irvine centre has some 16,000 sq. ft. in excess of its future requirements as a district centre

(ii) Kilwinning has a total of 48,650 sq. ft. gross of retail and service trade floor space of which 37,050 sq. ft. is in Kilwinning centre. Using the same assumptions as for Irvine the existing 11,600 sq. ft. outside the centre will be supplemented by new local shops for the immigrants amounting to 8,000 x 750 sq. ft. = 6,000 sq. ft.

This brings the total local shopping floor space to 17,600 sq. ft. and this can be deducted from the total estimated requirements for Kilwinning centre as follows:

79,730 sq. ft. - 17,600 sq. ft. = 62,130 sq. ft.

If this figure is compared with the actual amount of shopping floor space it is seen that Kilwinning centre has some 25,200 sq. ft. below its future requirements as a district centre.

B. BUILD-UP of SHOPPING in the CENTRAL AREA of the NEW TOWN

5.30 The actual rate of build-up will, of course, depend upon the intake of jobs, the production of houses and the roads and services construction programme. What is given here is an estimate of the amount of floor space justified for a given population level. For 1972 onwards when the central area will commence by serving a purely district centre function for the people living in the town centre and in adjacent districts within closer walking distance to these facilities than to any others the following calculations can be made.

5.31 It is assumed that the population in these areas will spend the average amount per head on district facilities (i.e. £105.3 per annum)

Table 5.12a

SALES AREA OF THE CENTRAL AREA FUNCTIONING AS A DISTRICT CENTRE

Population living closer to the central area than to any district centre (central area population in parenthesis)	Total turnover in retail and service trades (The retail component is in parenthesis) £	Turnover conversion factor £/sq. ft.	Gross floor space requirements (The retail component is in parenthesis) sq. ft.
2,000 (1,000)	186.600 (176.500)		7,460 (6,640)
4,000 (2,000)	373.200 (353.000)		14,930 (13,270)
6,000 (3,000)	559,800 (529,000)		22,390 (19,900)
8,000 (4,000)	746,400 (706,000)	25 (26.6)	29,860 (26,540)
10,000 (5,000)	933,000 (882 500)		37,320 (33,170)
12,000 (6,000)	1,119,600 (1,059 000)		44,780 (39,810)
14,000 (6,000)	1,282,200 (1.213,000)		51,290 (45,600)
16,000 (6,000)	1,448,000 (1,367,000)		57,920 (51,390)

5.32 By the time the population reaches 10,000 in the central area and the adjoining areas the total population of the new town will be of the order of 60,000.

5.33 From the total retail sales (calculated values) given in Table 5.1a and the total service trade turnover (average value) it is possible to estimate the amount of central area sales which might be attracted there, given certain conditions as to the accessibility and attraction of this centre relative to other rival centres, by deducting the local and district level of sales from the total for the new town.

Table 5.12b

SALES OF THE CENTRAL AREA FUNCTIONING AS A TOWN CENTRE FOR A NEW TOWN POPULATION OF 60,000

	Total for town	Total for Local and District Centres
Retail sales	£11,931,000	£6,149,200 *
Service Trade Turnover	£ 4,077,000	£2,038,500
Totals	£16,008,000	£8,187,700
Balance for town centre =	£7,820,300	

* This figure excludes the amount spent in the town centre on district and local shopping by the walk-in population (see Table 11a for details)

5.34 This figure of £7,820,300 represents £6,887,000 more than is attracted to the centre functioning only as a district centre. Because of the early stage of the development of the central area for a total population of 60,000 this sales level should be regarded more as an upper limit than an average value. If it could be achieved the centre could contain some 312,800 sq. ft. of which 37,300 sq. ft. would be related to its function as a district centre.

5.35 It is significant that a town population of 50,000 - 60,000 is regarded as the minimum required to support a departmental store of some 15,000 to 25,000 sq. ft. If such a store could be attracted in the early years of the development of the new town it would act as a magnet for the smaller establishments and be a considerable aid in the general build-up of the central area.

POPULATION CENTROID for AYRSHIRE

Table 5.13

POPULATION PROJECTION FOR AYRSHIRE (excluding new town development at Irvine)

Authority	Population in Year			
	1961 (Census)	1971 Development Plans	1984 Development Plans	2,000 Projection
LARGE BURGHS				
Ayr	45,276	46,000	49,670	56,290
Kilmarnock	47,509		60,000	73,560
SMALL BURGHS				
Ardrossan	9,573	10,950	12,130	14,320
Cumnock	5,403		10,410	12,740
Darvel	3,255		3,260	3,330
Galston	4,023		4,620	4,280
Girvan	6,159		9,220	10,420
Irvine	16,911	17,750	21,830	28,650
Kilwinning	7,289	7,950	9,070	11,020
Largs	9,104		10,960	12,010
Maybole	4,677		5,040	5,200
Newmilns	3,541		4,140	3,690
Prestwick	12,562		15,780	18,340
Saltcoats	14,182	15,900	18,410	22,670
Stevenston	10,164	11,400	14,060	18,760
Stewarton	3,387		6,650	7,430
Troon	9,927		13,790	14,530
DISTRICTS OF COUNTY				
Ayr	12,955		20,810	24,010
Cumnock	36,463		42,870	55,400
Dalmellington	14,136		14,140	16,540
Girvan	5,290		5,290	5,460
Irvine	9,151		11,060	11,750
Kilbirnie	21,951		23,860	27,370
Kilmarnock	15,484		17,770	20,780
Maybole	5,741		5,740	6,210
Newmilns	1,763		1,760	1,800
Saltcoats (West Kilbride)	6,946		8,720	9,770
Totals	342,822		421,080	496,530

Figs. 43 and 44 (pages 194 and 195) demonstrate the increasing importance of the area of North Ayrshire as a strategic location to serve the regional shopping requirements of Ayrshire.

NOTES on TABLE 5.13

A. Natural Increase

i. FERTILITY

5.36 It has been assumed that 1963 crude birth rates for each authority would continue to 2,000, and these rates have been used to calculate future natural increase for each authority. This is the assumption which the Registrar-Generals for England and Scotland appear to have used in their projections of national population.

ii. MORTALITY

5.37 A steady decline in crude death rates for ages under 45 has been assumed according to the pattern projected for England and Scotland in the national projections of population. The assumption is that by 1984 and the 1963 crude death rates will be reduced to 0.6 of their 1963 level, and that by 2000 the 1963 crude death rates will be reduced to 0.5 of their 1963 level. For ages over 45, it is assumed that 1963 crude death rates will continue up to the year 2000. This is not quite in accord with national projections which anticipate some improvement in mortality rates up to the age of 90, but for present purposes it was thought wiser to prepare a broad assessment of population growth than to suggest spurious accuracy through refined projection techniques.

B. Projection Technique

5.38 Natural increase has been projected for each local authority upon the assumption that their 1961 age structures would be maintained up to the year 2000, as would be the balance between the sexes in each authority. This assumption is again in favour of economy and a broad rather than a spuriously precise projection.

5.39 The Registrar-General for Scotland's Annual Report for 1963 was used as the source for statistics of fertility and mortality.

5.40 Estimates of 1984 population were accepted as given by Ayr County Council Planning Department in the Written Statements for the Town Map areas in the County, or, where the Written Statements looked only to 1971, were adjusted from 1971 predictions. The 1984 estimates for the Burghs of Ayr and Kilmarnock were prepared after discussions with the Burgh Planning Departments.

5.41 Local authority and other boundaries used in the population analyses were as at the time of the 1961 Census.

C. Migration

5.42 In the Registrar General for Scotland's Annual Report for 1963, it was stated that migration for Scotland as a whole would be: "An annual net loss of 30,000 persons in the first year, decreasing gradually to 20,000 in 1968-69".

5.43 For the purposes of the population projection for Ayrshire it has been assumed that similar circumstances will apply. Accordingly, it has been assumed that the average annual net loss from Ayrshire during the intercensal period 1951-61 will be reduced by a third.

5.44 The apportionment of the resulting figure between the various local authorities within the county of Ayrshire has been carried out in proportion to their respective average annual net migrational gains or losses for the inter-censal period 1951-61.

5.45 For the county Districts of Ayrshire (for which only the total inter-censal population increase and decrease figures are available for the period 1951-61) the balance of migration has been calculated by assuming that all County districts will have the same annual rate of natural increase as that of the combined landward areas of the County.

5.46 Overspill agreements between the City of Glasgow and local authorities in Ayrshire for the period up to 1981 have been taken into account in all calculations - with the exception of the possible future overspill agreement for the new "town" of Irvine.*

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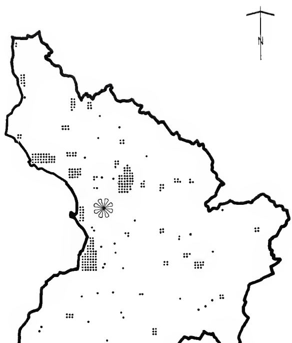
* Information of population overspill agreements obtained from the Planning Department of the City of Glasgow, the Planning Department of Ayr County and Burgh Engineers of the Large and Small Burghs of Ayrshire.

43

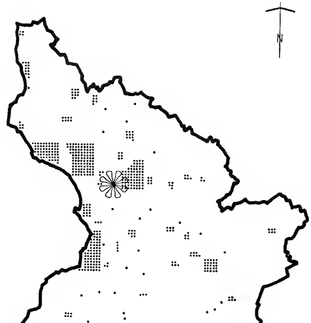


AYR COUNTY POPULATION DISTRIBUTION 1961

Each dot represents 1000 persons ●

Population Centroid for Ayrshire ✳

Fig. 4



AYR COUNTY POPULATION PREDICTION AD 2000

Each dot represents 1000 persons ●

Population Centroid for Ayrshire ✳

Figures include a New Town with an immigrant population of 55,000

APPENDIX 6

Range of Dwelling Types for the first five years of the House Building Programme of the Development Corporation.

6.1 As there is a certain similarity between new towns in the structure of immigrant families and since we have used the Harlow age/sex breakdown for the detailed population of new town housing immigrants, we have applied the Harlow table of household composition - based on a 10% survey - to the first 5 year building programme of 3,000 houses/households (maximum building rate) in Irvine New Town.

6.2 The procedure by which the range of forms of accommodation is deduced is as follows:

Step 1 The structure of households in Harlow Development Corporation houses in 1961 indicates the number of persons in each household comprising adults aged 20 and over, adolescents aged 15 - 19 and children 0 - 14

Step 2 As the Harlow structure does not show the sex of any of the adults, adolescents or children, it is necessary for the purposes of applying fitting standards to distinguish firstly which households were headed by married couples and which by single, widowed or divorced persons. The Ministry of Labour Family Expenditure Survey analyses the rates at which households in the United Kingdom are or are not headed by adults of opposite sex, and failing any other obvious guide, it has to be assumed that this indicates the degree to which households are led by married couples

Step 3 The household structure deduced in Step 2 is further divided to show which families with children aged under 14 contained all boys, all girls, and the proportion of each sex where the family contained both boys and girls aged under 14.

Step 4 The structure of households thus deduced is translated into the pattern of dwelling types required by various standards

Step 5 The ranges of dwelling types produced by Step 4 are then rationalised to limit the number of types without reducing the fitting standards.

STEP 1

Table 6.1

HOUSEHOLD COMPOSITION (Adapted from a 10% Survey of Harlow Development Corporation Housing, 1961)

20 & over Adults	15 - 19 Adolescents	Children 0 - 14						All Households
		0	1	2	3	4	5 & over	
1	0	*(5.33) 160	(0.53) 16	(0.45) 14	(0.07) 2	1	1	194
	1	(0.84) 25	(0.38) 11			(0.07) 2		38
	2	(0.07) 2	(0.07) 2					4
	3	1						1
Total		188	29	14	2	3	1	237
2	0	(18.00) 540	(18.60) 558	(21.30) 639	(9.30) 279	(3.27) 98	(0.99) 30	2,144
	1	(3.58) 107	(3.10) 93	(1.80) 54	(0.68) 20	(0.23) 7	(0.15) 5	286
	2	(1.37) 41	(0.84) 25	(0.23) 7	(0.15) 4	(0.23) 7	1	85
	3	(0.30) 9	(0.07) 2					11
Total		697	678	700	303	112	36	2,528
3	0	(2.06) 62	(1.29) 39	(0.76) 23	(0.15) 5	(0.07) 2	1	132
	1	(0.84) 25	(0.53) 16	(0.38) 11	(0.07) 2	(0.23) 7	1	62
	2	(0.15) 5	(0.15) 5	(0.07) 2				12
	3	(0.07) 2	(0.07) 3					5
Total		94	63	36	7	9	2	211
4 & 5	0	(0.15) 5	(0.07) 2	(0.07) 2		(0.07) 2		11
	1	(0.23) 7	2	1				10
	2	(0.07) 2	(0.07) 2					4
	3		1					1
Total		14	7	3		2		26
All households		(33.1) 993	(25.9) 777	(25.1) 753	(10.4) 312	(4.2) 126	(1.3) 39	3,000 (100)

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* Percentages in brackets. As the Harlow figures are based on a sample, adjustments have been made to include family

STEP 2

6.3 Various household categories were used to break down Table 1 and the U.K. Family Expenditure Survey for 1964 was used to determine the number of 2 person households that contained people of the same sex. It was not possible to determine the number of 2 person households made up of the opposite sex which did not contain a married couple (i.e. elderly father and middle aged daughter, etc.), it was assumed that 2 person households of the opposite sex were all married.

6.4 In interpreting the Harlow household structure, it was supposed that where there were two or more adults in a household, that two were married to each other but that there were no other married couples in the household.

6.5 Where the Harlow household structure specified '4 or 5 adults', it was assumed that all households in fact had only 4. Similarly it was assumed that all households with '5 and over children' in fact had only 5.

6.6 Adults = people aged 20 and over; Adolescents = people 15 - 19; Children = people 0 - 14. For example 5 of 1 + 1 + 2 means 5 households with 1 adult, 1 adolescent and 2 children other than the head or heads of the household:

Table 6.2

Part 1	Single, widowed or divorced person plus:						
Others in household	0	1	2	3	4	5	6
Without children, adolescents or adults	160						
With adolescents		25	2	1			
With other adults		50					
With other adults and adolescents							
With children of the same sex With children of the opposite sex		16	14	2	1	1	
With adolescents and children of opposite sex With adolescents and children of same sex			11	2 of 2+1		2 of 1+4	
Total	160	91	27	5	1	3	

Table 6.2

Part 2

	Married Couple +								
Others in household	0	1	2	3	4	5	6	7	8
Without children, adolescents or adults	490								
With adolescents		107	41	9					
With other adults		62	5						
With other adults and adolescents			25	5 of 1+2	2 of 1+3				
				7 of 2+1	2 of 2+2				
With children of the same sex		558	639	279	98	30			
With children of the opposite sex									
With adolescents and children of the same sex			93	25 of 2+1	7 of 2+2	4 of 2+3	7 of 2+4	1 of 2+5	
With adolescents and children of					20 of 1+3				
the opposite sex				54 of 1+2	2 of 3+1	7 of 1+4	5 of 1+5		
With other adults and children of the same sex			39	2 of 2+1	2 of 2+2		2 of 2+4		
With other adults and children of opposite sex				23 of 1+2	5 of 1+3	2 of 1+4	1 of 1+5		
With other adults, adolescents and					5 of 2+1+1	3 of 1+3+1			
children of the same sex				16 of 1+1+1	5 of 1+2+1	2 of 2+2+1	7 of 1+1+4	1 of 1+1+5	
With other adults, adolescents and					12 of 1+1+2	1 of 2+1+2	1 of 2+3+1		
children of the opposite sex						2 of 1+2+2			
						2 of 1+1+3			
	490	727	842	420	156	53	23	2	

STEP 3

6.7 The Parker Morris Report suggests that two lively children with homework to do may be better off in separate bedrooms. If serious homework occurs at the age of 10 and over, then it would be necessary to distinguish households with two or more children of the same sex and aged 10 - 14. Bedroom sharing by children of the same sex but at opposite ends of the 0 - 14 age group is also a problem.

6.8 In this study, it was found too complex to pick out households of these two kinds. If a minimal fitting standard of only one bedspace per person in each household is considered to be adequate, this problem would have to be faced. However, if at least 50% of households are allowed a spare bedspace it could be assumed that the problem could be solved. Therefore, the full sub-division of households into those with and without children aged 10 - 14 has not been attempted, nor has separation of households headed by elderly persons or containing only an elderly person.

6.9 The formulae were used to extend Table 6.2 in further detail. They show the likelihood of various combinations of boys and girls occurring in families of varying size. These probability formulae are set out in Table 6.3:

Table 6.3

Of 10,000 families with 2 children - 5,000 will have children of the opposite sex
" " " " 3 " - 7,500 will have children of the opposite sex
" " " " 4 " - 5,000 will have 3 children of the same sex
" " " " " " - 3,750 will have 2 children of each sex
" " " " 5 " - 3,125 will have 4 children of the same sex
" " " " " " - 6,250 will have 3 children of the same sex
" " " " 6 " - 1,875 will have 5 children of the same sex
" " " " " " - 4,687 will have 4 children of the same sex
" " " " " " - 3,125 will have 3 children of the same sex
" " " " 7 " - 1,094 will have 6 children of the same sex
" " " " " " - 3,281 will have 5 children of the same sex
" " " " " " - 5,469 will have 4 children of the same sex

Table 6.2 may then be extended to the detail set out in Table 6.4

Table 6 . 4

Part 1

	Single, widowed or divorced person +				
Others in household	2	3	4	5	6
With children of the same sex	7				
With children of the opposite sex	7	2(2+1)	1(3+1)		
With adolescents and children of the same sex	11	2 of 2+1			
With adolescents and children of the opposite sex				1 of 1+4(3+1) 1 of 1+4(2+2)	
Total	25	4	1	2	

Note: Balance of sexes in parenthesis

Table 6.4

Part 2	Married Couple +					
Others in household	2	3	4	5	6	7
With children of the same sex	319	70	24			
With children of the opposite sex	320	209	50(3+1) 24(2+2)	20(3+2) 10(4+1)	1 of 2+4	
With adolescents and children of the same sex	93	25 of 2+1 27 of 1+2	2 of 3+1 3 of 2+2 5 of 1+3	1 of 1+4 1 of 1+4		
With adolescents and children of the opposite sex		27 of 1+2	4 of 2+2 15 of 1+3	2 of 1+4(2+2) 4 of 1+4(1+3) 3 of 2+3(2+1)	2 of 2+4(2+2) 4 of 2+4(1+3) 3 of 1+5(3+2) 2 of 1+5(4+1)	1 of 2+5(3+2)
With other adults and children of the same sex)	39	2 of 2+1 12 of 1+2	1 of 2+2 1 of 1+3			
With other adults and children of the opposite sex)		11 of 1+2	1 of 2+2 4 of 1+3	1 of 1+4(2+2) 1 of 1+4(3+1)	1 of 2+4(2+2) 1 of 2+4(3+1) 1 of 1+5(3+2)	
With other adults, adolescents and children of the same sex)		16 of 1+1+1	2 of 2+1+1 5 of 1+2+1 5 of 1+1+2	3 of 1+3+1 1 of 1+2+2 2 of 2+2+1 1 of 2+1+2	1 of 2+3+1 1 of 1+1+4	
With other adults, adolescents and children of the opposite sex)			6 of 1+1+2	1 of 1+2+2 2 of 1+1+3(2+1)	2 of 1+1+4(2+2) 4 of 1+1+4(3+1)	1 of 1+1+5(2+3)
	771	399	152	53	23	2

Note: Balance of sexes in parenthesis

STEP 4

6.10 Using alternative fitting standards, Table 6.4 can be translated into ranges of dwelling types as in Table 6.5 below.

Notes:
- i. Not more than 2 persons to a bedroom
- ii. Only heads of households and their spouses and children of the same sex to sleep in the same bedroom
- iii. Spare bedspaces supplied in columns 2 and 3, used to convert single bedrooms to doubles so far as possible
- iv. d = double bedroom: s = single bedroom

Table 6.5

DWELLING TYPES

Bedrooms	1 Minimum Standard i.e. no separate rooms for children studying and no spare bedspace	2 Minimum Standard plus one spare bed-space for every second household	3 Minimum Standard plus one spare bed-space for every household
1s	160	80	
2s	91	45	
3s	20	10	
4s	3	1	
5s	1		
1d	490	325	160
2d	319	526	734
3d	48	163	318
1d + 1s	734	658	561
1d + 2s	525	272	20
1d + 3s	102	53	3
1d + 4s	21	11	1
1d + 5s	6	3	
1d + 6s	1		
2d + 1s	316	582	644
2d + 2s	89	95	102
2d + 3s	13	17	21
2d + 4s	9	7	6
3d + 1s	34	66	137
3d + 2s	14	14	13
3d + 3s	2	7	10
4d		17	34
4d + 1s		7	14
4d + 2s		1	2
Totals	3,000 dwellings 10,594 bedspaces	3,000 dwellings 12,091 bedspaces	3,000 dwellings 13,806 bedspaces

STEP 5

6.11 To reduce the multiplicity of dwelling types without reducing fitting standards Table 6.5 can be rationalised as in Table 6.6:

Table 6.6

RATIONALISED DWELLING TYPES
Minimum Standard, i.e. no separate rooms for children studying
and no spare bedspaces

Bedrooms		No.	%
1.	1d	650	21.7
2.	1d + 1s	845	28.2
3.	1d + 2s	847	28.2
	2d + 1s	318	10.6
4.	1d + 3s	103	3.4
	2d + 2s	158	5.3
5.	2d + 3s	19	0.6
	3d + 2s	58	1.9
6.	3d + 3s	2	0.1
		3,000 dwellings	100.0
		10,891 bedspaces	

Minimum Standards plus one spare bedspace
for every second household

Bedrooms		No.	%
1.	1d	405	13.5
2.	1d + 1s	713	23.6
3.	1d + 2s	799	26.6
	2d + 1s	582	19.4
4.	1d + 3s	53	1.9
	2d + 2s	289	9.6
	3d + 1s	86	2.9) 3.6
5.	2d + 3s	20	0.7)
	3d + 2s	38	1.3
6.	4d + 2s	15	0.5
		3,000 dwellings	100.0
		12,250 bedspaces	

Minimum Standard plus one spare bedspace
for every household

Bedrooms		No.	%
1.	1d	160	5.3
2.	1d + 1s	581	19.4
3.	1d + 2s	754	25.2
	2d + 1s	847	28.2
4.	2d + 2s	421	14.0
	3d + 1s	137	4.6) 5.3
5.	2d + 3s	21	0.7)
	3d + 2s	53	1.8
6.	3d +3s	10	0.3
	4d + 2s	16	0.5
		3,000 dwellings	100.0
		13,620 bedspaces	

APPENDIX 7

Schools provision for the new town during the first five years

1. NURSERY SCHOOLS

7.1 It is generally agreed that, when financially possible, children aged between 3 and 4 should have the chance to attend a nursery school. As attendance will be voluntary, the nursery school demand may be taken as being half the number of children aged 3 and 4. By January 1st, 1972 the number of children of nursery school age in the new town will be:

Table 7.1

Age	Population in new town houses			Population in private houses			Established population			Total Population of the new town		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
3	179	182	341	55	51	106	351	335	688	585	548	1,133
4	171	158	329	52	49	101	350	335	685	573	542	1,115
Totals	350	320	870	107	100	207	701	670	1,371	1,158	1,090	2,248

7.2 Out of a total of 2,248 children of nursery school age, places for 1,124 children should be provided. All population figures in this section are derived from the population projection in Appendix 4.

PRIMARY SCHOOLS

7.3 Primary school children are taken as being aged between 5 and 12. By January 1st, 1972, the number of primary school children in the new town will be:

Table 7.2

Age	Population in new town houses			Population in private houses			Established population			Total population of the new town		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
5	156	144	300	49	44	93	343	284	827	548	472	1,020
8	140	129	269	45	42	87	313	291	604	498	462	960
7	126	116	242	41	38	79	360	294	654	527	448	975
8	115	105	220	37	34	71	284	307	591	436	446	882
9	104	94	198	34	30	84	310	338	648	448	482	910
10	98	87	183	30	27	57	262	307	589	388	421	809
11	88	78	168	30	24	54	288	280	548	408	362	788
Total	825	753	1,578	266	239	505	2,180	2,081	4,241	3 251	3,073	8,324

7.4 The primary school places needed by 1st January, 1972, will, therefore, be 6,324. At 45 pupils per class maximum, these children will require a minimum of 140 classes.

7.5 As the percentage of Roman Catholic children could well vary between 10 and 20 a figure of 15% has been taken as a guide and at this standard, 5,940 primary school children would include almost 950 Catholics.

3. SECONDARY SCHOOLS

7.6 Compulsory attendance at secondary schools will be required up to the age of 16 after 1970. From 16 - 18 a diminishing percentage of children attend school. The estimates given below are based upon forecasts for 1972 produced by the Statistics Branch of the Scottish Education Department.

Table 7.3

Age	Percentage attendance in 1972	
	Boys	Girls
15	97.5	98.1
16	31.8	28.3
17	21.7	16.1
18 and over	5.7	2.6

7.7 The number of children attending secondary school in the new town in January, 1972 will be:

Table 7.4

Age	Population in new town houses			Population in private houses			Established population			Total population of the new town		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
12	78	72	150	24	22	46	259	284	543	361	378	739
13	70	85	135	22	21	43	297	275	572	389	361	750
14	63	61	124	21	19	40	262	250	512	346	330	678
15	49	49	98	16	16	32	282	239	521	347	304	651
16	22	21	43	7	7	14	128	118	246	157	146	303
17	6	5	11	2	2	4	41	31	72	49	38	87
18	2	1	3	1	0	1	18	10	28	21	11	32
19	0	0	0	0	0	0	3	1	4	3	1	4
Totals	290	274	564	93	87	180	1,290	1,208	2,498	1,673	1,569	3,242

7.8 The secondary schools requirements will, therefore, be for 3,242 places by January, 1972.

7.9 Taking 15% as the proportion of Roman Catholics in the population of secondary school age, some 486 secondary school places would be required for this number. This would be sufficient to support a 3 form entry Catholic Secondary School.

APPENDIX 8

A. TRAFFIC PREDICTIONS

Basis of Prediction

8.1 While maximum accessibility is important the form it will take will depend on the standard of personal convenience demanded and the willingness or ability to pay for it. The increasing use of the motor car is evidence of the demand for more personal convenience, but the willingness to pay for its consequences has not yet been demonstrated.

8.2 Clearly this is a decision which cannot be predetermined and provision should be made in immediate developments for a range of possibilities. The policy plan should be flexible enough to accommodate variation in the ratio of private to public transport at various stages of its growth.

8.3 The critical load expected for any transport system is associated with the work journey movements. It follows, therefore, that the capacities required at various points are dependent mainly on the distribution of workers and jobs.

8.4 Current Ministry of Transport Memoranda recommend that "the design of main traffic routes in built up areas should be based on peak hour demands" (Source: Roads in Urban Areas). Thus the future volumes of traffic in the new town have been calculated for the morning and evening peak hours of an average week day. The study was based on the premise that the work journey will continue to be the major element in the peak hour traffic. Three basic assumptions have been made in respect of the peak hour movements:

(i) 60% of all work to home journeys occur within the evening peak hour

(ii) 70% of the passenger car units (p.c.u.'s) in the evening peak hour are on work to home trips, the remaining 30% being engaged on other trip purposes such as shopping, business or recreation

(iii) Morning peak hour car volumes are two-thirds of the evening volumes in the opposite direction

8.5 To ensure that the communications system will be adequate for a range of land use patterns, alternative plans have been tested. The first (Plan A) allocates to industry all the ground on the site which is suitable for industrial development and tests an employment structure of 70% manufacturing and 30% service. The second (Plan B) tests an employment structure of 40% manufacturing and 60% service. In both cases the worker/acre density was taken as 30 for manufacturing industry and 100 for service industry and all land suitable for housing was assumed to be developed. Thus in Plan A the total population in the new town is assumed to be 106, 500 and in Plan B, 112, 700.

8.6 For the purpose of the analysis the new town and the approaches were divided into 90 zones in Plan A and 93 zones in Plan B. These zones were treated as single generators and/or attractors of trips.

8.7 Five alternative commuting directions were given zone numbers thus enabling all origins and destinations inside or outside the area to be designated by a zone code number. The five directions are towards Ayr, Kilmarnock, Glasgow East (via A736 through Lugton), Glasgow North (via A737 through Dalry) and Stevenston/Ardrossan.

8.8 Prediction of the future traffic flow demand between any two of the zones and the assignment of these to the proposed network would have been very lengthy and laborious by hand; hence use was made of a KDF9 computer in Glasgow University in preparing the inter-zonal tabulations and in the assignment to the network.

8.9 The use of the computer made it possible to have four rows of tabulation and assignment with the introduction of modifications to the land use and network each time.

8.10 The facility thus exists for those concerned with the further development and execution of the plan to use the traffic model on the computer to examine variations in the plan or intermediate stages in its development.

Worker / Employment Distribution

8.11 From the planning data a table was prepared for each plan of the number of families living in each zone and these families were sub-divided into three socio-economic groups having different car owning potential (Tables 8.1 and 8.3).

8.12 The families were converted to workers per zone using a factor of 1.4 workers per family in each socio-economic group.

8.13 Similarly for each plan a table was prepared of the number of jobs available in each zone and it was assumed that 50% of the service jobs in each zone would be occupied by workers from within the zone and would not, therefore, be available for workers from other zones (Tables 8.2 and 8.4).

8.14 In order to complete the tables of jobs available in each zone for workers from the zones and workers in each zone who would travel to other zones it was necessary to consider the number of workers living in the town who would travel out of the town to jobs in the five commuting directions and also the number of jobs in the town which would be occupied by workers living outside the town and travelling in by the five commuting directions. The proportion assumed in each case was 25% and the tables of distribution between the five directions are given in the Appendix.

8.15 The distribution of workers to jobs was related solely to the opportunities and no time function was introduced. It was felt that journey times about the town would not be such as to influence workers in their selection of employment except in the case of service jobs within each district (see paragraph 8, 13).

Car Ownership

8.16 There can be no doubt that the level of ownership of private cars will increase dramatically and current predictions estimate that this will level off at not less than 0.4 cars per person sometime towards the end of this century. On the basis of a 3.2 persons per family factor this gives a saturated ownership of 1.28 cars per family.

Modal Split

8.17 It is not desirable that irrevocable decisions should be made now as to whether people will have complete freedom to use their cars at all times or whether restraints will be imposed for particular journeys (such as the work journey) or in particular locations (such as the central area). Also the degrees of freedom may vary as the community grows and the plan should be flexible enough to accommodate a wide range of decisions.

8.18 The analysis has assumed that journeys within each district are made on foot and that 68% of all the cars available are used in the journey to work within the town. 75% of the cars available for the commuting journey are assumed to be in use. Finally the average occupancy of work journey cars is assumed to be 1.5 persons including the driver and these figures give an overall modal split of 79.4% by private transport and 20.6% by public transport made up as follows:

Walking	8.9
Car driver	47.0
Car passenger	23.5
Public transport	20.6

The use of pedal cycles by adults in Scotland has declined to such an extent as to be unworthy of particular consideration.

8.19 The tables of inter-zonal movements will be made available to the Development Corporation.

Assignment

8.20 Only the work journey car driver trips have been assigned to the network and these have been expanded to allow for other vehicles on other trip purposes.

8.21 Average running speed and hence journey time tables were prepared for all sections of the network and used in the network description tables. This data plus the inter-zonal tabulations were processed by the computer which gave the flow of traffic on each section for the morning and evening peak hours.

8.22 The assignment allocated vehicles to the quickest path between their origins and destinations and adjustments were made to these figures because the capacity of the communications spine was predetermined by the decision to make it an expressway with two lanes in each direction. The adjustment consisted of syphoning onto the Irvine/Kilwinning bypass some of the traffic which would otherwise have overloaded the spine.

Highway Requirements

8.23 In assessing the highway requirements to accommodate the predicted traffic volumes the following capacities have been assumed for peak hour urban conditions bearing in mind that all the roads should be free of any obstruction such as parked cars:

Communications spine (expressway)	-	3,000 p.c.u.'s in each direction
Flank roads	-	1,500 p.c.u.'s per lane
Distributor roads	-	2,000 p.c.u.'s total of both directions with separate waiting space for right turning vehicles where required.

8.24 The lane requirements for each section of the network are given on fig. 49, page 233. No significant difference between the lane requirements of Plans A and B remained after the adjustments had been carried out. The three main elements are:

West flank road (Irvine/Kilwinning bypass) - dual carriageway with three lanes in each direction and fly-over junctions

Communications spine - dual carriageway with two lanes in each direction and sophisticated signal control junctions

Distributor roads - single two-way carriageways with one lane in each direction and a protected bay for right turning traffic at the junctions.

8.25 The turning movements at the junctions are also available from the computer output and four categories have been indicated. The precise form which each junction should have within the four categories is a matter for detail design beyond the scope of this study. The four categories are:

i. Uncontrolled surface junctions

ii. Controlled surface junctions

iii. Fly-over with free-flow in one direction and interrupted flow in the other

iv. Fly-over with free-flow in both directions.

8.26 The traffic prediction and consequent highway network have been derived from the proposed content of the various land use elements of the Basic Plan and have used certain assumptions in respect of car ownership modal split etc. It is important that those assumptions and the land use input data should be re-appraised from time to time as development proceeds; the tool to examine variations and stages is available in the computer programme.

Plan A

Input Data

i.	No. of Internal housing zones	32
ii.	No. of Internal work zones	48
iii.	No. of Internal and External housing zones	37
iv.	No. of Internal and External work zones	53
v.	Proportion of workers living in internal housing zones who work in the town	75%
vi.	Proportion of workers working in internal work zones who live in the town	75%
vii.	Family worker conversion factor for all S.E.G.s	1.440
viii.	Internal housing zone data by S.E.G.	see Table 1
ix.	No. of jobs available in each internal work zone	see Table 2
x.	Proportion of "Commuters Out" working in each external zone	

Area	Zone No.	% Split
Ayrshire	49	10
Stevenston/Ardrossan	50	6
Kilmarnock	51	42
Glasgow N	52	22
Glasgow E	53	20

xi. Proportion of "Commuters In" living in each external housing zone

Area	Zone No.	% Split
Ayrshire	33	10
Stevenston/Ardrossan	34	41
Kilmarnock	35	37
Glasgow N	36	6
Glasgow E	37	6

xii. Car ownership factors for each S. E. G.

	Car Ownership factor
S. E. G. 3	0.85
S. E. G. 2	1.0
S. E. G. 1	1.2

xiii. Car Usage factor - internal 0.68 (i.e. 0.75 modified for walkers)

xiv. Car Usage factor - external 0.75

xv. Car Occupancy factor 1.5

Table 8 . 1

INTERNAL HOUSING ZONE DATA BY S.E.G.

Zone	Population	House-holds	S.E.G.1	S.E.G.2	S.E.G.3	Workers
1	675	211	33	38	140	304
2	3,225	1,008	612	329	67	1,451
3	4,428	1,384	331	168	885	1,993
4	3,360	1,050	138	630	284	1,512
5	1,736	543	0	0	543	781
6	2,078	649	33	48	548	934
7	1,880	588	78	353	159	846
8	1,760	550	72	330	148	792
9	7,195	2,249	291	1,350	608	3,238
10	2,680	837	110	502	225	1,206
11	1,760	550	147	288	115	792
12	1,325	414	311	103	0	596
13	9,240	2,888	375	1,732	781	4,158
14	10,720	3,350	436	2,010	904	4,824
15	1,225	383	287	98	0	552
16	6,000	1,875	244	1,125	508	2,700
17	2,200	688	284	303	101	990
18	1,880	588	78	353	159	846
19	5,440	1,763	424	948	391	2,538
20	800	250	33	150	87	380
21	3,710	1,159	185	580	394	1,869
22	3,960	1,238	198	619	421	1,782
23	3,100	948	140	534	294	1,395
24	1,025	320	240	80	0	462
25	4,400	1,375	179	825	371	1,980
26	8,700	2,094	0	68	2,028	3,015
27	3,800	1,187	0	203	984	1,710
28	4,797	1,499	414	265	818	2,159
29	2,200	687	329	94	264	990
30	1,408	440	104	0	336	833
31	1,266	395	0	0	395	570
32	359	112	0	0	112	162
Total	106,330	33,272	8,100	14,122	13,048	47,940

Table 8 . 2

NO. OF JOBS AVAILABLE IN EACH INTERNAL WORK ZONE

Zone	Total Jobs	Jobs Internally Occupied (i.e. 50% of Service Jobs	Jobs Available for those Outside the Zone
1	58	29	29
2	275	138	137
3	626	188	438
4	288	143	143
5	1,257	73	1,184
6	177	89	88
7	520	80	440
8	149	74	75
9	971	306	665
10	228	114	114
11	269	74	195
12	112	56	56
13	788	393	393
14	1,061	456	605
15	105	52	53
16	4,000	-	4,000
17	187	94	93
18	180	80	80
19	480	240	240
20	68	34	34
21	565	157	408
22	337	189	168
23	364	132	232
24	87	44	43
25	374	187	187
26	570	285	285
27	323	181	162
28	608	204	404
29	187	93	94
30	920	80	860
31	208	54	154
32	531	15	516
33	1,620	-	1,620
34	750	-	750
35	1,230	-	1,230
36	2,130	-	2,130
37	500	-	500
38	4,050	-	4,050
39	2,400	-	2,400
40	3,870	-	3,870
41	1,200	-	1,200
42	3,960	-	3,960
43	540	-	540
44	900	-	900
45	943	-	943
46	3,600	-	3,600
47	1,000	-	1,000
48	2,397	-	2,397

Plan B

Input Data

i. No. of internal housing zones 35

ii. No. of internal work zones 48

iii. No. of internal and external housing zones 40

iv. No. of internal and external work zones 53

v. Proportion of workers living in internal housing zones who work in the town 75%

vi. Proportion of workers working in internal work zones who live in the town 75%

vii. Family worker conversion factor for all S.E.G.s 1.440

viii. Internal housing zone data by S. E. G. see Table 3

ix. No. of jobs available in each internal work zone see Table 4

x. Proportion of "Commuters Out" working in each external work zone

Area	Zone No.	% Split
Ayrshire	49	10
Stevenston/Ardrossan	50	6
Kilmarnock	51	42
Glasgow N	52	22
Glasgow E	53	20

xi. Proportion of "Commuters In" living in each external housing zone

Area	Zone No.	% Split
Ayrshire	48	10
Stevenston /Ardrossan	49	41
Kilmarnock	50	37
Glasgow N	51	6
Glasgow E	52	6

xii. Car Ownership factors for each S. E. G.

	Car Ownership Factor
S. E. G. 3	0.85
S. E. G. 2	1.0
S. E. G. 1	1.2

xiii. Car Usage factor - internal 0.68 (i.e. 0.75 modified for walkers)

xiv. Car Usage factor - external 0.75

xv. Car Occupancy factor 1.5

Table 8.3

INTERNAL HOUSING ZONE DATA BY S.E.G.

Zone	Population	House-holds	S.E.G. 1	S.E.G. 2	S.E.G. 3	Workers *
1	875	211	33	38	140	304
2	3,225	1,008	812	329	67	1,451
3	4,428	1,384	331	168	885	1,993
4	3,380	1,050	136	630	284	1,512
5	1,736	543	0	0	543	781
6	2,076	649	33	68	548	934
7	1,880	588	78	353	159	846
8	1,360	425	55	255	115	612
9	8,750	2,110	1,582	528	0	3,037
10	2,680	837	110	502	225	1,206
11	2,160	675	212	335	128	972
12	1,325	414	311	103	0	596
13	8,880	2,775	361	1,665	749	3,996
14	10,560	3,300	429	1 980	891	4,752
15	1,225	383	287	98	0	552
16	6,000	1,875	244	1,125	506	2,700
17	2,200	688	284	303	101	990
18	1,880	588	78	353	159	848
19	5,280	1,650	215	990	445	2,378
20	800	250	33	150	67	360
21	3,760	1,175	188	588	399	1,692
22	3,680	1,150	184	575	391	1,656
23	2,900	906	145	453	308	1,305
24	1,025	320	240	80	0	462
25	4,400	1,375	179	825	371	1,980
26	6,700	2,094	0	86	2,028	3,015
27	3,800	1,187	0	203	984	1,710
28	4,797	1,499	418	285	818	2,159
29	2,200	687	329	94	284	990
30	1,408	440	104	0	336	633
31	1,266	395	0	0	395	570
32	359	112	0	0	112	162
33	-	-	-	-	-	-
34	1,000	313	130	600	270	450
35	-	-	-	-	-	-
36	-	-	-	-	-	-
37	-	-	-	-	-	-
38	-	-	-	-	-	-
39	-	-	-	-	-	-
40	-	-	-	-	-	-
41	-	-	-	-	-	-
42	5,000	1,562	203	937	422	2,250
43	720	225	29	135	61	324
44	1,200	375	49	225	101	540
45	-	-	-	-	-	-
46	-	-	-	-	-	-
47	-	-	-	-	-	-
Total	112,695	35,218	7,816	15,017	13,272	50,714

* Worker availability factor 0.9055

Table 8 . 4

NO. OF JOBS AVAILABLE IN EACH INTERNAL WORK ZONE

Zone	Total Jobs	Jobs Internally Occupied (i. e. 50% of Service Jobs)	Jobs Available for those Outside the Zone
1	58	29	29
2	695	137	558
3	1,046	188	858
4	286	143	143
5	447	74	373
6	177	88	89
7	520	80	440
8	938	58	878
9	1,394	287	1,107
10	228	114	114
11	184	92	92
12	112	56	56
13	1,605	377	1,228
14	1,718	449	1,269
15	105	53	52
16	7,000	-	7,000
17	187	93	94
18	160	80	80
19	1,299	225	1,074
20	68	34	34
21	570	160	410
22	723	156	567
23	1,166	123	1,043
24	87	44	43
25	374	187	187
26	570	285	285
27	323	161	162
28	608	204	404
29	187	94	93
30	920	60	860
31	208	54	154
32	531	15	518
33	1,880	-	1,680
34	85	43	42
35	1,230	-	1,230
36	2,130	-	2,130
37	500	-	500
38	4,050	-	4,050
39	2,400	-	2,400
40	3,870	-	3,870
41	1,200	-	1,200
42	835	213	622
43	61	30	31
44	102	51	51
45	943	-	943
46	3,600	-	3,600
47	1,000	-	1,000
48	2,538	-	2,536

ZONE PROPORTION DATA
(i.e. assignment of zones to sections of road network)

Residential Zones Plan A

Zone	Section No.	Proportion	Section No.	Proportion	Zone
1	21	1.0	0	0	1
2	20	0.5	23	0.5	2
3	21	0.8	22	0.4	3
4	23	1.0	0	0	4
5	23	0.7	25	0.3	5
6	22	0.5	28	0.5	6
7	28	0.5	29	0.5	7
8	28	0.5	27	0.5	8
9	29	1.0	0	0	9
10	26	1.0	0	0	10
11	31	1.0	0	0	11
12	29	0.5	39	0.5	12
13	39	1.0	0	0	13
14	31	1.0	0	0	14
15	39	1.0	0	0	15
16	36	0.5	38	0.5	16
17	48	1.0	0	0	17
18	41	0.5	49	0.5	18
19	42	0.5	44	0.5	19
20	50	1.0	0	0	20
21	46	1.0	0	0	21
22	45	0.5	46	0.5	22
23	52	1.0	0	0	23
24	46	1.0	0	0	24
25	76	1.0	0	0	25
26	76	0.5	75	0.5	26
27	33	0.5	75	0.5	27
28	33	0.5	79	0.5	28
29	78	0.4	79	0.6	29
30	74	1.0	0	0	30
31	74	0.5	73	0.5	31
32	74	0.5	73	0.5	32
33	72	1.0	0	0	33
34	18	1.0	0	0	34
35	55	1.0	0	0	35
36	8	1.0	0	0	36
37	66	1.0	0	0	37

ZONE PROPORTION DATA
(i.e. assignment of zones to sections of road network)

Work Zones Plan A

Zone	Section No.	Proportion	Section No.	Proportion	Zone
1	21	1.0	0	0	1
2	20	0.5	23	0.5	2
3	21	0.8	22	0.4	3
4	23	1.0	0	0	4
5	23	0.7	25	0.3	5
8	22	0.5	28	0.5	6
7	28	0.5	29	0.5	7
8	28	0.5	27	0.5	8
9	29	1.0	0	0	9
10	26	1.0	0	0	10
11	31	1.0	0	0	11
12	29	0.5	39	0.5	12
13	39	1.0	0	0	13
14	31	1.0	0	0	14
15	39	1.0	0	0	15
16	38	0.5	49	0.5	16
17	48	1.0	0	0	17
18	41	0.5	49	0.5	18
19	42	0.5	44	0.5	19
20	50	1.0	0	0	20
21	46	1.0	0	0	21
22	45	0.5	46	0.5	22
23	52	1.0	0	0	23
24	46	1.0	0	0	24
25	76	1.0	0	0	25
26	76	0.5	75	0.5	28
27	33	0.5	75	0.5	27
28	33	0.5	79	0.5	28
29	78	0.4	79	0.8	29
30	74	1.0	0	0	30
31	74	0.5	73	0.5	31
32	74	0.5	73	0.5	32
33	19	0.5	23	0.5	33
34	23	1.0	0	0	34
35	23	1.0	0	0	35
36	26	1.0	0	0	38
37	32	0.5	26	0.5	37
38	18	1.0	0	0	38
39	73	1.0	0	0	39
40	50	1.0	0	0	40
41	46	1.0	0	0	41
42	52	1.0	0	0	42
43	53	1.0	0	0	43
44	52	1.0	0	0	44
45	54	1.0	0	0	45
46	58	1.0	0	0	46
47	47	1.0	0	0	47
49	72	1.0	0	0	49
50	18	1.0	0	0	50
51	55	1.0	0	0	51
52	8	1.0	0	0	52
53	66	1.0	0	0	53

ZONE PROPORTION DATA
(i. e. assignment of zones to sections of road network)

Residential Zones Plan B

Zone	Section No.	Proportion	Section No.	Proportion	Zone
1	21	1.0	0	0	1
2	20	0.5	23	0.5	2
3	21	0.6	22	0.4	3
4	23	1.0	0	0	4
5	23	0.7	25	0.3	5
6	22	0.5	28	0.5	6
7	28	0.5	25	0.5	7
8	28	0.5	27	0.5	8
9	29	1.0	0	0	9
10	26	1.0	0	0	10
11	31	1.0	0	0	11
12	29	0.5	39	0.5	12
13	39	1.0	0	0	13
14	31	1.0	0	0	14
15	39	1.0	0	0	15
16	36	0.5	38	0.5	16
17	48	1.0	0	0	17
18	41	0.5	49	0.5	18
19	42	0.5	44	0.5	19
20	50	1.0	0	0	20
21	46	1.0	0	0	21
22	45	0.5	46	0.5	22
23	52	1.0	0	0	23
24	46	1.0	0	0	24
25	76	1.0	0	0	25
26	76	0.5	75	0.5	26
27	33	0.5	75	0.5	27
28	33	0.5	79	0.5	28
29	78	0.4	79	0.6	29
30	74	1.0	0	0	30
31	74	0.5	73	0.5	31
32	74	0.5	73	0.5	32
33	23	1.0	0	0	33
34	52	1.0	0	0	34
35	53	1.0	0	0	35
36	52	1.0	0	0	36
37	72	1.0	0	0	37
38	18	1.0	0	0	38
39	55	1.0	0	0	39
40	8	1.0	0	0	40
41	66	1.0	0	0	41

ZONE PROPORTION DATA
(i.e. assignment of zones to sections of road network)

Work Zones Plan B

Zone	Section No.	Proportion	Section No.	Proportion	Zone
1	21	1.0	0	0	1
2	20	0.5	23	0.5	2
3	21	0.6	22	0.4	3
4	23	1.0	0	0	4
5	23	0.7	25	0.3	5
6	22	0.5	28	0.5	8
7	28	0.5	29	0.5	7
8	28	0.5	27	0.5	8
9	29	1.0	0	0	9
10	26	1.0	0	0	10
11	31	1.0	0	0	11
12	29	0.5	39	0.5	12
13	39	1.0	0	0	13
14	31	1.0	0	0	14
15	39	1.0	0	0	15
16	36	0.5	38	0.5	16
17	48	1.0	0	0	17
18	41	0.5	49	0.5	18
19	42	0.5	44	0.5	19
20	50	1.0	0	0	20
21	46	1.0	0	0	21
22	45	0.5	46	0.5	22
23	52	1.0	0	0	23
24	46	1.0	0	0	24
25	76	1.0	0	0	25
26	76	0.5	75	0.5	26
27	33	0.5	75	0.5	27
28	33	0.5	79	0.5	28
29	78	0.4	79	0.6	29
30	74	1.0	0	0	30
31	74	0.5	73	0.5	31
32	74	0.5	73	0.5	32
33	19	0.5	23	0.5	33
34	23	1.0	0	0	34
35	23	1.0	0	0	35
36	28	1.0	0	0	36
37	32	0.5	26	0.5	37
38	18	1.0	0	0	38
39	73	1.0	0	0	39
40	50	1.0	0	0	40
41	46	1.0	0	0	41
42	52	1.0	0	0	42
43	53	1.0	0	0	43
44	52	1.0	0	0	44
45	54	1.0	0	0	45
46	58	1.0	0	0	46
47	47	1.0	0	0	47
49	72	1.0	0	0	49
50	18	1.0	0	0	50
51	55	1.0	0	0	51
52	8	1.0	0	0	52
53	66	1.0	0	0	53

DESCRIPTION OF NETWORK FOR ASSIGNMENT PROGRAMME

This table describes each link of the network in turn and gives details of all adjacent sections. The thousandth part of the number is the adjacent section number and the remaining part is the time units required to proceed from the section being described to the appropriate adjacent section.

Section No.	Adjacent Section Data					
1	- 57,012	+ 2,013	+ 56,015	+ 61,012	- 72,020	0
2	- 33,010	+ 3,012	+ 34,009	+ 58,016	- 1,013	- 57,013
3	+ 32,001	+ 4,013	- 24,009	+ 34,009	- 2,012	- 33,010
4	- 18,000	+ 5,008	- 19,008	- 24,008	- 3,013	+ 32,010
5	- 6,006	+ 7,005	0	- 19,004	- 4,008	- 18,000
6	+ 7,009	- 5,006	0	0	0	0
7	+ 69,006	0	0	- 5,005	- 6,009	0
8	+ 21,012	+ 9,009	- 20,008	- 69,004	+ 70,033	+ 64,006
9	- 22,009	+ 10,010	+ 25,007	- 20,009	- 8,009	+ 21,013
10	- 27,004	+ 11,007	- 26,007	+ 25,005	- 9,010	- 22,007
11	- 30,005	+ 12,009	- 30,013	- 26,008	- 10,007	- 27,005
12	- 37,008	+ 62,007	- 36,007	- 31,014	- 11,009	- 30,006
13	- 47,006	+ 14,009	- 45,008	- 42,000	- 62,006	- 41,005
14	- 52,012	+ 15,007	- 53,005	- 45,007	- 13,009	- 47,007
15	- 55,009	+ 16,004	- 56,011	- 53,004	- 14,007	- 52,011
16	- 59,003	+ 17,003	- 58,003	- 56,011	- 15,004	- 55,009
17	- 60,002	- 61,008	0	- 58,002	- 18,003	- 59,002
18	+ 5,003	- 19,003	- 4,007	0	0	0
19	- 4,008	- 18,003	+ 5,004	+ 20,005	- 23,010	0
20	- 8,008	+ 21,012	+ 9,009	- 23,013	+ 19,005	0
21	+ 28,012	+ 22,011	0	+ 9,013	- 20,012	- 8,012
22	+ 10,007	+ 25,004	- 9,009	- 21,011	+ 28,007	0
23	+ 19,010	+ 20,013	0	- 25,011	+ 28,013	- 24,010
24	- 3,009	+ 32,006	+ 4,008	+ 23,010	- 25,003	+ 26,005
25	+ 26,006	+ 24,003	+ 23,011	- 9,007	- 22,004	+ 10,005
26	- 10,007	- 27,005	+ 11,008	+ 24,005	+ 23,013	- 25,006
27	+ 11,005	- 26,005	- 10,004	- 28,005	+ 29,010	0
28	+ 29,013	+ 27,005	0	+ 22,007	- 21,012	0
29	+ 39,014	+ 30,010	0	+ 27,010	- 28,013	0
30	+ 12,006	- 31,010	- 11,005	- 29,010	+ 39,006	0
31	- 11,013	- 30,010	+ 12,014	+ 35,011	- 36,010	- 34,012
32	- 76,006	+ 77,007	0	+ 4,010	- 24,006	- 3,011
33	+ 3,010	+ 34,007	- 2,010	+ 79,007	- 78,005	0
34	+ 31,012	+ 35,005	- 36,004	- 2,009	- 33,007	+ 3,009
35	- 12,007	- 37,003	+ 62,004	- 36,003	- 34,005	+ 31,011
36	- 34,004	+ 31,010	+ 35,003	0	0	0
37	+ 62,003	- 35,003	- 12,008	- 39,007	- 63,005	- 38,003
38	+ 37,003	- 39,006	- 83,004	0	0	0
39	- 63,008	- 38,006	+ 37,007	+ 30,006	- 39,014	0
40	+ 49,003	+	0	0	0	0
41	+ 13,005	- 42,003	- 62,003	- 40,004	+ 49,003	0
42	- 62,004	- 41,003	+ 13,006	- 44,006	- 42,002	0
43	+ 42,002	- 44,006	0	0	0	0
44	- 43,006	+ 42,006	0	+ 45,005	- 46,000	0
45	- 13,006	- 47,004	+ 14,007	- 46,008	+ 44,000	0
46	+ 44,011	+ 45,008	0	+ 53,009	- 54,010	0
47	+ 14,007	- 45,004	- 13,006	- 50,008	- 51,004	+ 52,011

cont. on page 223

DESCRIPTION OF NETWORK FOR ASSIGNMENT PROGRAMME
(cont. from page 222)

Section No.	Adjacent Section Data					
48	+ 50,006	- 49,003	0	0	0	0
49	- 48,003	+ 50,007	0	+ 41,003	- 40,003	0
50	- 51,008	+ 52,013	+ 47,006	- 49,007	- 48,006	0
51	+ 52,009	+ 47,004	- 50,008	- 67,005	+ 88,004	0
52	+ 15,011	- 53,009	- 14,012	+ 47,011	- 50,013	- 51,009
53	- 14,005	- 52,009	- 15,004	- 54,005	+ 46,009	0
54	+ 46,010	+ 53,005	0	0	0	0
55	+ 16,009	- 56,016	- 15,009	- 68,010	- 71,017	0
56	- 15,011	- 55,016	+ 16,011	- 1,015	- 57,015	+ 2,016
57	+ 2,013	+ 56,015	- 1,012	- 73,009	- 80,007	0
58	- 16,003	- 59,002	+ 17,002	0	0	0
59	+ 17,002	- 58,002	- 16,003	+ 60,002	0	0
60	- 61,008	- 17,002	0	+ 59,002	0	0
61	- 17,008	- 60,008	0	+ 72,022	+ 1,012	0
82	- 41,003	+ 13,006	- 42,004	- 35,004	- 12,007	- 37,003
63	- 38,004	+ 37,005	- 39,008	- 65,011	- 68,033	+ 87,008
64	+ 65,011	0	0	+ 8,006	- 69,004	+ 70,033
65	- 86,030	+ 67,013	- 63,011	- 64,011	0	0
66	+ 67,035	+ 63,033	- 65,038	0	0	0
67	+ 68,009	+ 51,005	0	+ 83,008	- 65,013	- 66,035
88	- 71,013	+ 55,010	0	+ 51,004	- 67,009	0
69	+ 70,031	+ 64,004	+ 8,004	- 7,006	0	0
70	0	0	0	+ 64.033	+ 8,033	- 69,031
71	+ 55,017	- 68,013	0	0	0	0
72	+ 1,020	+ 61,022	0	0	0	0
73	- 80,004	+ 57,009	0	0	0	0
74	- 79,006	+ 80,005	0	0	0	0
75	+ 78,004	- 77,007	0	0	0	0
76	+ 77,007	- 32,006	0	0	0	0
77	- 75,007	+ 78,005	0	- 32,007	- 76,007	0
78	+ 33,005	+ 79,006	0	- 77,005	- 75,004	0
79	+ 80,005	- 74,008	0	- 78,006	+ 33,007	0
80	+ 57,007	+ 73,004	0	- 74,005	- 79,005	0

B. SUGGESTED STANDARDS for TRAFFIC and ROADS within the DISTRICTS

8.27 Factors for consideration in the preparation of layouts of residential areas:

i. Classification of Area

Residential areas have been classified in three socio-economic groups having different levels of amenity, house cost, income group and status. The ultimate car ownership levels predicted for each group are as follows:

Group 1 - High classification (owner/occupier houses)
1.2 per family

Group 2 - Medium classification 1.0 per family

Group 3 - Low classification (L.A. housing)
0.85 per family

ii Number of Dwellings in Each Residential Unit

Group 1 - 200
Group 2 - 300
Group 3 - 500

Note: A residential unit is defined here as a self-contained group of houses some or all of which have direct frontage onto roads serving the whole unit and the sizes are derived from a maximum traffic flow of 300 veh/hr. on such roads, which have associated with them, parking, garaging and pedestrian activity

iii Segregation of Vehicles and Pedestrians

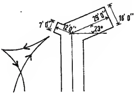
The layout should endeavour to segregate from vehicular routes, pedestrian routes linked to centres of pedestrian activity outside the residential unit (i.e. to schools, churches, shops, open space, etc.) particularly where these centres are particular to irresponsible pedestrians, such as children. The layout should also recognise that all service roads (i.e. frontage roads) have a high degree of pedestrian activity which is inherent within the unit and the design should accommodate this by:

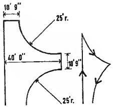
(a) Physical designation of areas of admixture of vehicles and pedestrians by using surfaces other than those recognised as priority surfaces for vehicles
(b) Adequate intervisibility between vehicles and pedestrians.

iv Vehicular Turning Places

(a) should not be located at points of shortest transfer distance to dwellings (otherwise they will be used for parking)

(b) must contain an area adequate in dimensions for service vehicles to turn - the minimum area for a 4 wheel medium commercial vehicle is shown below:





(c) Garage Entrances:

1. At right angles to road - 30 feet from the face of garage to far side of road

2. Garages face to face - 25 feet between garages

v. Parking

(a) should be located at point of shortest transfer distance between road and dwelling

(b) number of places:

Group 1 - 1.8 per dwelling
Group 2 - 1.5 " "
Group 3 - 1.3 " "

The above requirements are for year 1990 and initially supply may be restricted to the following:

(c) Group 1 - 1.5 per dwelling
Group 2 - 1 " "
Group 3 - 1 " "

In the above provision 1 space in each class is for the resident vehicle and may be the garage apron provided it is located at the shortest transfer distance

(d) size of parking bays - 17 ft. by 7 ft. 6 in.

vi. Garaging

(a) Ultimate supply should match car ownership

i.e. Group 1 - 1.2 per family
Group 2 - 1.0 " "
Group 3 - 0.85 " "

Supply at any time should match ownership and measures should be taken to discourage the use of road space or parking space for storage of resident vehicles

(b) Transfer distances of up to 300 yards from dwellings to garages is acceptable

(c) Garage size 17 ft. x 9 ft.

vii. Car Servicing

Communal servicing areas should be available off street with water supply and drainage. These should be preferably associated with garaging and screened from view

viii. Design Elements of Roads

(a) Development Roads having frontage, garaging, manoeuvring, etc.

Width	18 ft.
Design speed	20 m.p.h.
Min. Hor. Radius	50 ft.

Note: Use should be made of this radius in order to control running speeds

Max. Gradient		1 in 12
Camber		1 in 36
Max. super-elevation		1 in 36
Minimum sight distance		100 ft.
Minimum vertical curvature		K = 8 or Radius = 800 ft.
Minimum channel gradient		1 in 120
Junction with housing feeder		Tee Junction
Minimum kerb radius		15 ft.
Sight lines	back up service road	20 ft.
	along feeder road	100 ft.

Note: For a distance of 20 ft. into the service road from its junction with the feeder road the gradient should not exceed 1 in 30.

(b) Local Distributor Road i. e. road with peak volumes in excess of 300 v. p. h. and off which traffic is distributed to the service roads - should have no frontage, no parking, no turning vehicles and no pedestrians, and serving a total of about 1, 500 Class C dwellings

Width	24 ft.
Design speed	25 m. p. h.
Min. Hor. Radius	120 ft.

Note: Use should be made of this radius in order to control running speeds

Max. gradient	1 in 15
Camber	1 in 36
Max. super-elevation	1 in 20
Minimum sight distance	130 ft.
Minimum vertical curvature	K= 15 or Radius = 1, 500 ft.
Minimum channel gradient	1 in 120
Junction with district distributor - channelised 'Bennet'	
Minimum spacing of junctions with district distributor	400 ft.

Note: For a distance of 30 ft. into the housing feeder road from its connection with the district distributor the gradient should not exceed 1 in 30.

C. TOWN CENTRE CAR PARKING

No. of households		x	Car ownership factor	=	No. of cars
Group 1	6, 102	x	1. 2		7, 322
Group 2	14, 142	x	1. 0		14, 142
Group 3	13, 048	x	0. 85		11, 090
Total no. of cars					32, 554

Friday

From above, total no. of cars		32, 554
Car usage factor	0. 68	
Cars being used for work journey	32, 554 x 0. 68	22, 137
Cars left for other purposes		10, 417
Of these 75% are used for shopping, i. e.		7, 813

These cars make trips spread over a five hour period

Therefore no. of trips per hour $\frac{7,813}{5}$ = 1,563

Add to this 50% to allow for outside shoppers = 782

Total trips per hour 2,345

This requires 2,345 parking spaces per hour for short term shoppers

No. of employees	4,000	
Retail floor space	400,000 sq. ft.	
No. of long term employees (from synthetic study)		2,358
Service and Commercial parking (assumed)		119
Short term shoppers parking (from above)		2,345
Total no. of spaces required		4,822

Saturday

For Saturday assume that 45% of work trips are made

thus no. of cars used for work journey

22,137 x 0.45 9,962

Therefore, cars left for other purposes 22,592

Of these 75% are used for shopping i. e. 16,944

No. of trips per hour = $\frac{16,944}{5}$ = 3,389

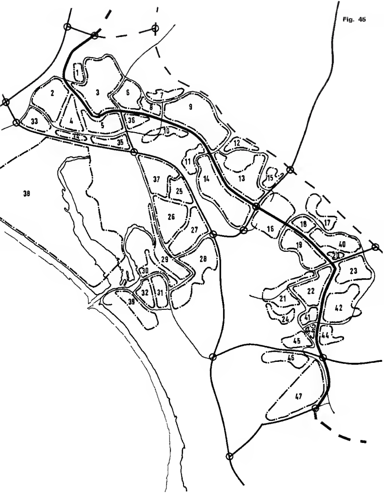
Add 50% to allow for outside shoppers = 1,695

5,084

No. of long term employees parking = 2,358 x 0.45	1,061
Service and commercial parking	119
Short term shoppers parking	5,084
Total no. of spaces required	6,264

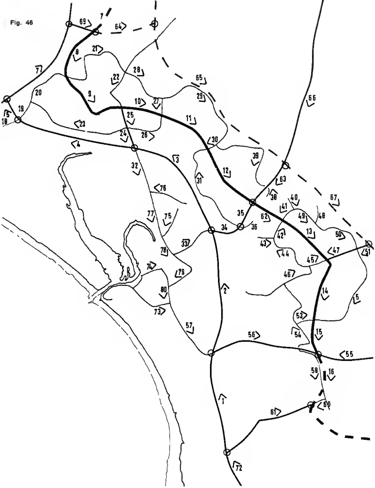
Note: If the population of the town is increased or the central area becomes of regional importance the number of parking spaces required could increase to about 8,000 - 10,000.

Fig. 45



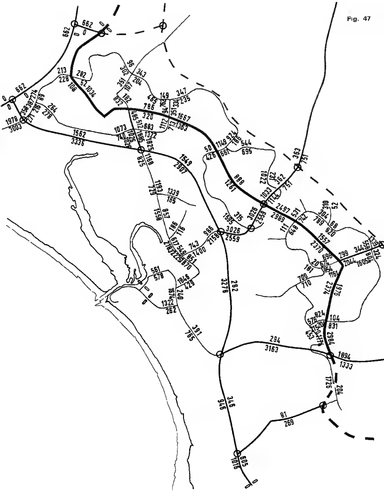
TRAFFIC ZONE NUMBERS

Fig. 46



ASSIGNMENT SECTION NUMBERS

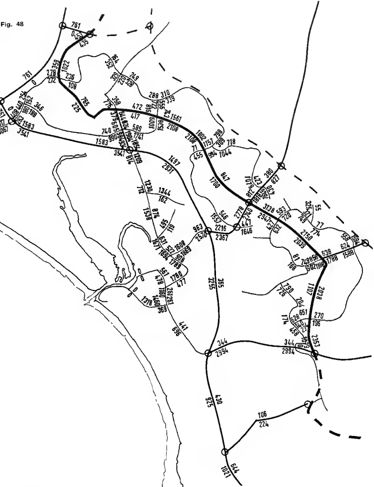
Fig. 47



PLAN A

EVENING PEAK FLOWS IN P.C.U's/HOUR

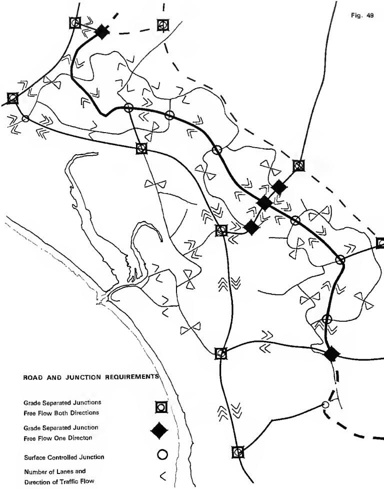
Fig. 48



PLAN B

EVENING PEAK FLOWS IN P.C.U's/HOUR

Fig. 49


ROAD AND JUNCTION REQUIREMENTS
Grade Separated Junctions Free Flow Both Directions
Grade Separated Junction Free Flow One Directon
Surface Controlled Junction
Number of Lanes and Direction of Traffic Flow
One Lane each Direction with a Central Lane for turning traffic

APPENDIX 9

Regional Park

THE TOURIST INDUSTRY

9. 1 Holidaymaking, based on the seaside, is a major and long established industry in Ayrshire and produces nearly £12 m. a year at the present time. In 1965, the Ayr County Council prepared a report on tourism in the area which made recommendation for its future based on a survey of existing facilities and patterns of behaviour.

9. 2 The number of staying visitors trebled during the decade before 1959, but since that date the trend has been reversed although this group is still the major source of income for the industry.

9. 3 In 1964, over one third of the visitors to Ayrshire were daytrippers mostly travelling by car from Glasgow and the Clyde area. Although their numbers are greatest at weekends the season for daytrippers depends upon the weather more than anything else; the sea-front can be nearly as busy on a good Sunday in January as on a good Sunday in July, although the hotels will be either empty or closed.

9. 4 The report stresses the importance of tourism to the County and recommends a programme of development and redevelopment. In particular, it proposes a broadening of the base of the industry to provide for 'holidays with a purpose' to complement the facilities offered by the traditional resorts.

9. 5 With increasing affluence, it is reasonable to suppose that more people will take their major annual holidays abroad where the environment is novel and the climatic conditions are more attractive than in Britain. At the same time, increasing mobility and the rising ownership and usage of cars will stimulate the demand for day and weekend recreational facilities convenient to the major centres of population.

THE NEW TOWN

9. 6 An area of some 6 square miles in the south of the Designated Area, although unsuitable for building, offers considerable possibilities for the development of a regional recreational centre. The rate of technical achievement and the rising standard of living are bringing about increases in leisure time and there is a general tendency in developed countries towards the creation of concentrated recreational facilities to serve regional rather than local populations. Furthermore, the growing concern with international

competition in sport is creating a need for more comprehensive facilities than can usually be made available at the local scale. It is reasonable to assume that during the course of the next decade or so the need for such facilities in the south of Scotland and particularly in the Glasgow region will become more pressing.

9.7 The position of the new town at a point where the main roads and railway from Glasgow meet the Ayrshire Coast is significant when it is considered that this will bring any facilities that may be offered in the new town within half an hour's journey from the major centres of population in the region. The potential of Irvine Harbour and the first class beach extending southwards to Barassie, the possibilities for the provision of a wide variety of sports over the water areas which will be formed by the working of sand and gravel on the site, together with the recreational development of the remaining unproductive land, provide an opportunity to meet these needs on a suitable scale in a way that would be beneficial to both town and region and give a unique character to the new town.

9.8 We suggest, therefore, that serious consideration should be given to the creation of a complex of woodland, open spaces, beaches and fresh water lakes extending inland from the sea shore to the town centre, which would provide the setting for many facilities for recreation and relaxation. The exploitation of this potential would enrich the social and economic life of the new community.

SITE

9.9 The site extends over some 6 square miles inland from the 2½ mile length of foreshore which stretches from Irvine Harbour to Barassie (fig. 50, page 239). To the south it is bounded by the Ayr/Kilmarnock railway and to the north and west by the existing town of Irvine and the new development. At its extreme northern limit the site borders the central area.

9.10 This is a low lying flattish area of raised beaches and apart from the sector which is to be worked for sand and gravel extraction, the quality of land is poor, unrelieved by significant vegetation, and generally presents a neglected and bleak landscape.

9.11 The seaboard landscape has not been affected by development to any great extent except at Irvine and by the building of the railway which is generally at ground level or on embankments and which forms a visual and physical barrier between the beach and the hinterland. The River Irvine and its tributary the Annick Water meander across the north eastern sector of the site before turning northwards into the Irvine/Garnock estuary.

9.12 The coastal strip is composed of an excellent foreshore backed by a line of sand dunes with a unique natural Marram grass. Behind the dunes three golf courses are located on either side of the railway, the remaining land west of the Ayr/Irvine road being, at present, occupied by the Ministry of Defence and the Ministry of Civil Aviation. To the east of the road planning permission has already been granted for the working of the sand and gravel deposits which cover the major part of what good quality agricultural land there is in the area. Elsewhere some dairy farming is being carried out but a large tract of ground is taken up by the peats and bogs of Shewalton Moor.

ACCESS

9.13 Two major roads will cross the site and provide for direct access to it from the regional network. They are the Irvine bypass and the road which connects Irvine and Kilmarnock.

9.14 The Ayr/Glasgow railway line runs parallel to the coast giving access to the site through Irvine Station which is only a few yards from the harbour. The old station at Gailes Golf Course could be reopened to provide rail access to the centre of the park.

9.15 There is also the possibility of harbour improvements to link Irvine with other resorts both on the mainland and on the Islands off the coast.

PLAN

9.16 The object of the plan is to maintain a balance between commercial and social interests in the site while providing for the rehabilitation of the landscape and the orderly change in land use from a predominance of agriculture and mineral working to recreation.

9.17 The land containing the deposits of sand and gravel has great recreational potential. By controlling the disposition of the spoil and the shapes of the excavations, particularly at their edges, and by embarking upon a comprehensive programme of planting, large areas of water could be produced which would be of sufficient size, depth and amenity to encourage a wide range of sheltered water based leisure pursuits both active and passive. These would complement the attractions of the broad sandy sea shore and more vigorous maritime sports of the Firth of Clyde based on Irvine Harbour.

9.18 Because of the cool winds which are so often experienced blowing in from the sea along the Ayrshire Coast the attraction of the sea shore will depend largely upon easy access and the provision of shelter. The motor car could provide both and there is ample evidence on the Irvine foreshore, as on other beaches down the coast, of its value not only to transport daytrippers to the resorts, but also to provide personal shelter once they have arrived. For this reason it is suggested that the policy for the development of the sea front should be car-orientated and based on the construction of a coastal scenic road running southwards behind the littoral from Irvine Harbour towards Barassie.

9.19 The demand for weekend and holiday houses, a type of permanent leisure development which is growing in popularity on the Continent and beginning to establish itself in this country, cannot be ignored in the expansion of the tourist industry in the future. It is appreciated that there are social and administrative difficulties with such development but these are capable of solution and we recommend a policy which allows for a considerable provision of this type of accommodation.

9.20 The development of additional golf courses to the five which already function in the area may appear to be an over provision. But the existing courses are overloaded and the private clubs have long waiting lists for membership. With the introduction of the new town population and a considerable increase in tourist activity in the area we consider that three additional courses should be provided; sited near to the central area they will not only serve both town and regional needs but will also form a barrier between the new residential areas and tourist activity in the park.

9.21 There are many other activities which should be catered for in such a recreational complex. Indoor and outdoor games and stadium facilities, horse riding and equestrian sports, cycling, picnicing, viewing and walking are examples. In addition we feel that the opportunity should not be lost of improving the general knowledge of the natural sciences and appreciation of the countryside and to this end there could be included a miniature model farm over the better quality land, and nature and forest trails throughout the area. Restaurant, toilet, motel and club facilities will be required.

9.22 We have drawn up a test map for the distribution of land uses in the park; this is included as a rough guide only and mainly serves to indicate the scale on which we consider this type of development should be considered (fig. 51, page 240).

IMPLEMENTATION

9.23 The coordination of the many activities and uses in the area including the commercial exploitation of natural resources, the rehabilitation of the land and the development and operation of recreational facilities and activities will call for very careful and detailed planning. The relative importance of the various factors will change from time to tome and the work will demand cooperation between public and private interests for many years. For these reasons, we believe that this concept must be controlled by a public body, the nature and powers of which would require careful study.

9.24 The complexity of the task is indicated particularly by the sand and gravel deposits. Although there are large areas of land zoned for working, not all of these will necessarily produce new lakes. The material was deposited by wind and water, the character of the beds is known to vary from place to place and there is no guarantee that they are spread over the whole area in the manner suggested by trial bores. The rate of extraction and the position of the deposits which are exploited will depend upon the economic conditions which prevail from time to time. Therefore, the form of the final excavation is somewhat unpredictable and the proposals for the subsequent landscape and uses must be flexible. It follows that a finite master plan cannot be produced, and the development must be carried out on the basis of a strategic plan which establishes policies and the long term objectives. This should be supported by a series of action plans which would provide for the detailed implementation of the policies within the limits which can be predicted from time to time.

9.25 In order to prepare both a more comprehensive strategic plan and an action plan to initiate and control immediate developments in the area, we recommend that attention be given to the following matters without delay:

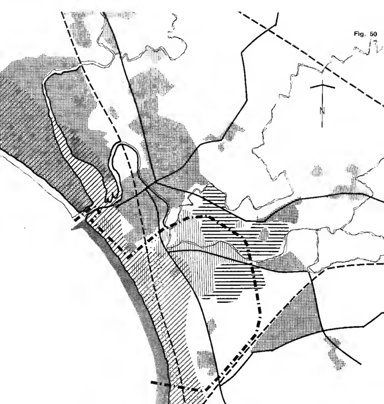
i. A programme for the extraction of the sand and gravel and the rehabilitation of the land should be worked out and checked at regular intervals with the owners of the deposits (Messrs. Kenneth Building Services Ltd. of Dreghorn). Advice could be obtained from the Sand and Gravel Association who have considerable experience of such problems

ii. The cooperation of the Ministry of Defence should be sought in beginning a programme of new planting in the exposed southern part of the site in order to provide a framework for the future development of camping sites and groups of holiday and weekend chalets

iii. The sea shore should be opened up by the construction of a coastal service road with parking places and toilet facilities, etc.

iv. Consideration should be given to the possibility of preparing the strategic plan by competition in a similar manner to that successfully held during 1965/66 for the design of the Town Moor at Newcastle upon Tyne.

Fig. 50

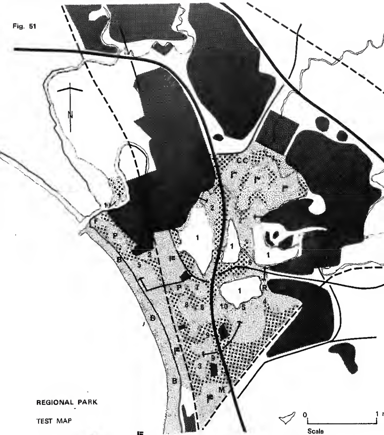


REGIONAL PARK

SITE APPRAISAL

Beach	▒
Seaboard Landscape	/////
Landscape Rehabilitation Area Boundary	▬ · ▬
Sand and Gravel Workings	‖‖‖‖‖
Sand and Gravel Reserves	═
Existing Development	▦
Existing Private Golf Courses	∴
Rivers	≈

Fig. 51



REGIONAL PARK

TEST MAP

Golf Course (Existing)	⚑
Golf Course (Proposed)	⚐
Water Sports	1
Playing Fields	2
Regional Sports Centre	3
Zoological Gardens	4
Major Afforestation	⁘
Picnic Areas	5
Equestrian Sports	6
Weekend & Holiday Houses (Stage 1)	7

Weekend & Holiday Houses (Stage 2)	8
Camping and Caravan Sites	9
Yacht Club	10
Beaches	B
Country Club	CC
Car Parks	P
Fairground	F
Motel	M
Restaurant	R

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